ENGINEERING CONSTRUCTION WEEKLY

JAN 28 1939

ENGINEERING NEWS-RECORD

JANUARY 26, 1939

Moving dirt with 25-yd. trucks features present construction at Shasta Dam

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ENGINEERING NEWS-RECORD

NEWS

Volume 122 JANUARY 26, 1939 Number 4

NOTEBOOK NEWS

Quick Surveys of Construction Events

▶A week of conventions in New York produced at least two noteworthy happenings. A report to the American Society of Civil Engineers on tests of large riveted joints gave structural engineers about equal reason to be satisfied and dissatisfied with current design practices, and a symposium before the New York State Sewage Works Association revealed how widely sewer revenue bonds are being employed. See pp. 6 and 10.

▶Republicans, now in control of Pennsylvania, do not like the Democrat's public works program that they fell heir to. At least they do not like the cost. Flood control, parks, public buildings, and even the South Penn toll road may feel the governor's hatchet. See p. 3.

▶TVA will not be investigated further unless Congress provides the committee with more money, Washington dispatches say.

▶Building the Florida Canal has been likened to construction of the Egyptian pyramids—using thousands of men for scores of years. In recommending a new start on the canal the President gave serious status to this quip by urging the use of relief labor over a "period lasting as long as ten or fifteen years."

▶Oklahoma, following Vermont's lead, takes exception to federal flood control dam building, but Oklahoma's Red River, on which the Denison Dam is to be built, lacks the publicity value of a name like Vermont's Ompompanoosuc. See p. 2.

HIS TRAINS START RUNNING

Charles H. Purcell, chief engineer of the California Toll Bridge Authority as well as of the state division of highways, saw final completion of his San Francisco-Oakland Bay bridge when he inaugurated service Jan. 15 on the interurban electric railway across the bridge.

As commuter traffic shifted to the bridge, with a saving of about 15 minutes each way, service was abandoned on the ferries.

Concrete Work Halts At Grand Coulee

Concrete pouring at Grand Coulee dam was stopped Jan. 10, and the contractors do not expect to resume work for at least a month. Work had been tapering off for several weeks, and it is planned to hold up operations until the danger of extreme cold weather has passed.

Quoddy, Florida Canal Revival Urged

President suggests canal be built over a ten or fifteen year period as relief jobs require

Resumption of work on the Florida canal and the Passamaquoddy tidal power development—two projects which were abandoned in 1936 after considerable amounts of relief money had been spent on them—was recommended by the President last week in a letter to Representative Mansfield, chairman of the Rivers and Harbors Committee.

The President suggested that the government continue construction of the Florida canal but "take its time in doing this, using as far as possible, relief labor, especially in periods when there is a good deal of unemployment. I would not," he said, "personally object to a construction period lasting as long as ten or fifteen years." The President asserted that the canal "will be built one of these days and that the

(*Continued on p. 7*)

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Detroit to Reopen One Incinerator

The city of Detroit, which last fall closed down three of its garbage and rubbish incinerators, will reopen the St. Jean Ave. plant at an early date, Commissioner of Public Works Beyster has announced. In the interests of economy the city has been burying its garbage, but frozen ground conditions now make this operation difficult. The Northwestern plant, which has been strongly criticized by residents in the vicinity, will not be put back into operation.

The police department is planning to conduct an educational campaign to encourage citizens to wrap their garbage in compliance with city ordinances.

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Oklahoma Protests Denison Dam

Legislature moves at governor's request to halt federal flood control structure

Two flood control issues—federal acquisition of land without state consent, and construction in one state of projects primarily for the benefit of states downstream—which have already caused controversy in Vermont were raised in Oklahoma last week when the lower house of the state legislature passed a resolution requesting Congress to delay any action on construction of the $56,000,000 Denison Dam on the Red River until the state could complete an investigation of the project. Action on the resolution is still pending in the upper house.

The legislature acted in response to a bitter attack on the project to which the newly elected governor, Leon C. Phillips, devoted a major part of his inaugural address.

The Denison Dam, to be built on the Red River two miles south of Platter, Okla., was authorized in the 1938 flood control act. The Chief of Engineers in his report to Congress last week recommended that $7,000,000 be spent in the coming fiscal year on the project.

In his address, the governor said that the 190-ft. high dam would flood several towns and valuable farm land in the state, would interfere with highways and public utilities, would deprive the state and its subdivisions of tax revenues, and would confuse the boundary between Oklahoma and Texas, which now lies on the south bank of the Red River.

The governor further took exception to the fact that the 1938 act permits the federal government to acquire land for the project without obtaining the consent of the state. The governor urged that the legislature immediately repeal a 1907 law giving the consent of the state to land purchases within the state by the federal government.

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Transcontinental Highway Up Again in Congress

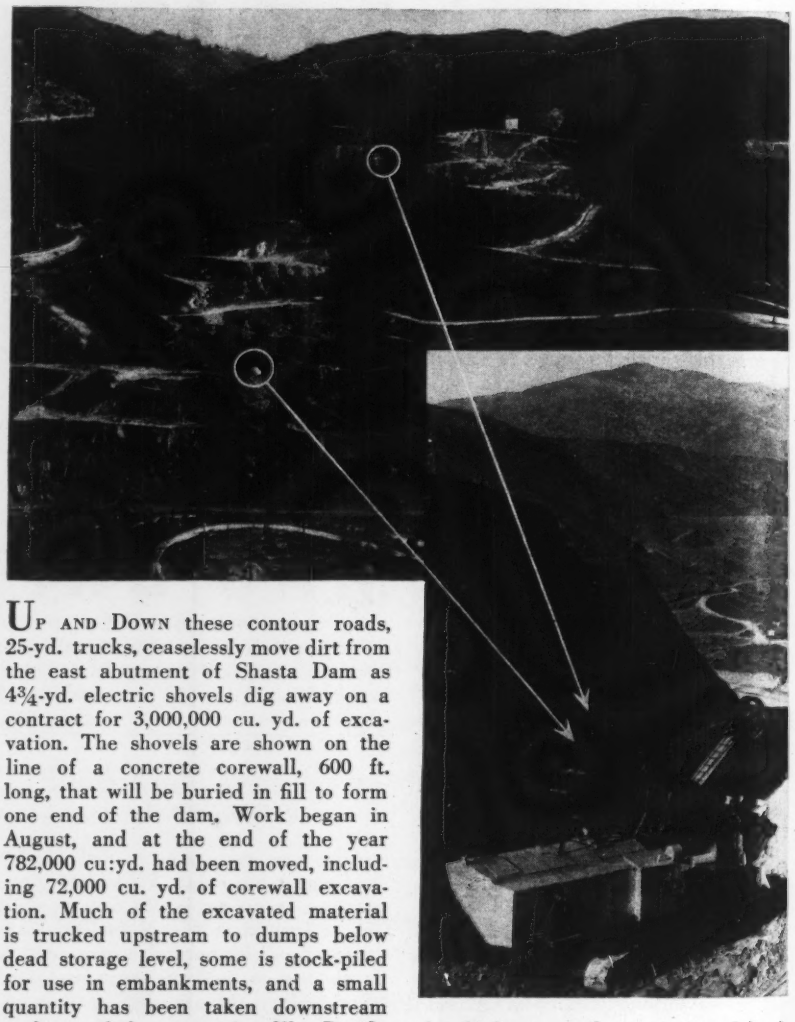
Construction of a number of superhighways spanning the country, a project which aroused some discussion in Congress last year and on which the Bureau of Public Roads will report to Congress in a few weeks, has already come up in Congress.

A bill introduced by Representative Steagall would set up a public corporation, its directors appointed by RFC, with power to issue bonds, totaling as much as $2,000,000,000 in any one calendar year, principal and interest guaranteed by the federal government. The corporation would construct a self-liquidating transcontinental system of highways by methods approved by the War Department.

The War Department would be given direct supervision of construction in a bill introduced by Representative Snyder and Senator Lundeen. This bill authorizes the Department of the Interior to locate and build a system of three transcontinental and six north and south highways at a cost limited to $8,000,000,000 over a period of sixteen years.

Representative Randolph has introduced a number of bills on the subject. Two of them would authorize a corporation already chartered in Delaware, the Transcontinental Streamlined Superhighway Corp., to issue $12,000,000,000 in bonds and to build superhighways under the supervision and direction of the U. S. Engineers. The bonds would be guaranteed by the United States, be tax exempt, and be refunded from tolls over a 30 year period. One bill proposes that the activities of the corporation be controlled be a five member commission appointed by the President, while the other would establish a commission composed of the heads of various federal departments as well as two Senators and two Representatives. A third bill would simply establish a five member Presidentially-appointed commission, receiving $10,000 a year salary, to study the problem.

CHANGING THE FACE OF NATURE AT SHASTA DAM SITE



UP AND DOWN these contour roads, 25-yd. trucks, ceaselessly move dirt from the east abutment of Shasta Dam as 4¾-yd. electric shovels dig away on a contract for 3,000,000 cu. yd. of excavation. The shovels are shown on the line of a concrete corewall, 600 ft. long, that will be buried in fill to form one end of the dam. Work began in August, and at the end of the year 782,000 cu:yd. had been moved, including 72,000 cu. yd. of corewall excavation. Much of the excavated material is trucked upstream to dumps below dead storage level, some is stock-piled for use in embankments, and a small quantity has been taken downstream to be used for camp-site fills. Pacific Constructors, Inc. a syndicate of twelve construction firms, is the contractor.

Shasta Dam, being built on the Sacramento River in California by the U.S. Bureau of Reclamation, will be the highest overflow gravity dam in the world, 487.5 ft. from reservoir to tailwater. It will require 5,400,000 cu. yd. of concrete as compared with 3,250,000 in Boulder Dam and 9,740,000 in Grand Coulee Dam.

Frederick Mears Dies, Great Northern Chief

Hutchinson, railway electrification specialist, and Hampden, levee expert, among other deaths

Frederick Mears, assistant chief engineer of the Great Northern Ry., died in Seattle, Jan. 11, at the age of 50. Mears first worked for the Great Northern at the age of 19 as a chainman, but after two years he enlisted in the Army, receiving a commission a year and a half later. From 1906 to 1914 he served with the Isthmian Canal Commission, working on construction of the Panama Canal R.R. Then for three years he was a member of the Alaskan Engineering Commission which directed construction of the Alaskan R.R. During the war he served in France as colonel of engineers and assistant general manager of transportation and then returned to his Alaskan post. He resigned from the army in 1923 to become chief engineer of the St. Paul Union Depot Co., a post which he held for two years. In 1925 he was appointed to the position he held at the time of his death.

CARY T. HUTCHINSON, an electrical engineer specializing in railway electrification, died in Coral Gables, Fla. Jan. 16 at the age of 72. A graduate of Washington University in 1886, Hutchinson took his doctorate at Johns Hopkins three years later and then spent two years with the railway department of the Sprague Electric Railway & Motor Co. and the General Electric Co. He was then for two years a member of the consulting firm of Sprague, Duncan & Hutchinson, and in 1894 he went into private practice as a consulting electrical engineer. Important work which he directed during this period included the electric equipment of the McCalls Ferry Power Co. and electrification of the Cascade Tunnel. He was also a consultant to the New York City Rapid Transit Commission. In 1923 Hutchinson became director of the department of railroad electrification of the New York City engineering firm of Sanderson & Porter, a post which he held until 1932.

JOHN HAMPDEN, New Orleans civil engineer who specialized in levee and flood control work, died Jan. 6 at the age of 54. Hampden graduated from Tulane University in 1905, spent several years with the U. S. Engineer Corps, and during the war served overseas with the 312th Engineers. Since 1928 he has been president of the Lewis-Chambers Construction Co.

WILL S. BARRON, who retired from business as a contractor in St. Louis about six years ago and who was at one time assistant engineer of the City of Clayton, Mo., died in St. Louis, Jan. 11 at the age of 65.

HOWARD L. MCBIRNEY, 26, Denver civil engineer recently employed by the TVA at Hiwassi, N. C., died Jan. 8. He was a graduate of Colorado University.

J. P. B. CASGRAIN, who was chief engineer during the 1880's of the Montreal and Pacific Junction Ry. and earlier a Quebec land surveyor and a Dominion land surveyor, died in Montreal, Jan. 6, at the age of 83. Since 1900, Casgrain had been active in Quebec politics and had held directorships in numerous Canadian industrial firms.

W. M. SMITH, 67, Florida contractor, died recently in Williston, Fla.

RANEY C. CABANIS, 62, Arkansas civil engineer, died at Earle, Ark., Jan. 10.

LT.-COL. ROBERT G. DYER, who had been a teacher in Georgetown Preparatory School since his retirement from the Army a year ago, died Jan. 14 in Washington at the age of 46. Dyer graduated from the U. S. Military Academy in 1916 and later studied at Massachusetts Institute of Technology. He was for some years an instructor at West Point and for four years was engineer of the Fifth Corps Area at Columbus.

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Construction League Plans To Broaden Program

Plans for developing an industry-wide working program adequate to cover the most important current construction problems were discussed by the Construction League of the United States at its annual meeting at New York, Jan. 21. It was decided to call a conference of representatives of national organizations in the construction industry in the near future to frame such a program.

The tentative program first studied was considered insufficiently broad to enlist support of all industry groups, and since such support is now lacking the proposal was made that the league discontinue active work until wider cooperation is assured. After discussion this proposal was rejected and in its place the plan for developing a broader program was approved.

William Stanley Parker, Boston, was reelected general chairman of the league, and Gordon P. Marshall was elected secretary.

Pennsylvania Projects Face Reduction

Pennsylvania Turnpike and State Authority jobs threatened by Republican administration

The future of major public works initiated in Pennsylvania by the Democratic government which left office Jan. 17 has been cast in considerable doubt by actions and statements of the new Republican administration. The new Republican governor, Arthur H. James, has indicated that he does not intend to carry out the ambitious building program planned for the General State Authority, has ordered cuts in state flood control work and in the work of the State Bureau of Parks, and has hinted that work may be held up on the 161-mile South Penn toll road.

Governor James has announced that he will dismiss Edward N. Jones, a member of the Pennsylvania Turnpike Commission whose appointment has not yet been confirmed by the State Senate and may not name a successor to him. The commission, of which Walter A. Jones is chairman, has begun work on the $60,000,000 South Penn toll road.

The 161-mile South Penn highway project, which the Turnpike commission is building, is being financed by a PWA grant and sale of revenue bonds to the RFC. Four grading and drainage contracts totaling $1,618,000 have already been awarded.

Building program to be cut

At the same time, Governor James announced that he does not intend to go ahead with a $149,000,000 building program which the General State Authority had intended to carry out upon completion of its present $65,000,000 program. Democratic plans for the authority included expenditure of $93,000,000 on schoolhouses throughout the state and about $56,000,000 on other institutional construction.

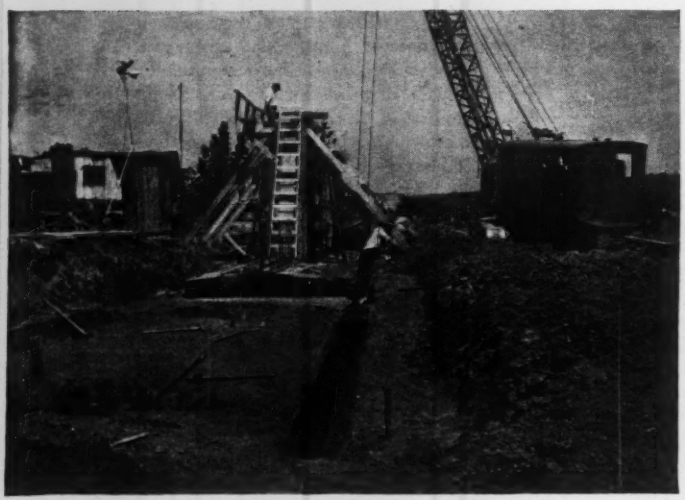
Flood control policy

All state flood control work "not immediately needed" has been ordered stopped, and 68 employees of the Department of Forests and Waters engaged on flood control work have been dismissed. The policy of the new administration on flood control will be established soon, James said, "one question being whether the state is willing to let the federal government take title to land and dam sites." Engineering employees among those dismissed included Paul McHale, advance land engineer, and H. L. Stewart, encroachment engineer. The State Bureau of Parks is to be made a division of the Bureau of Forests.

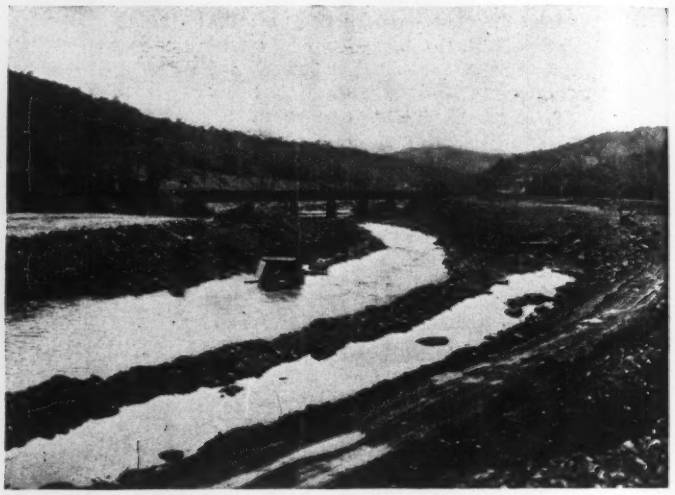
Toward Flood Control In the Ohio Valley

A COMBINATION reservoir and local protection flood-control program is under way in the Ohio River Valley. Designed and directed by the army engineers, these projects are planned to prevent repetition of the high-water disasters of 1936-37. On the headwaters in Pennsylvania, earth dams are under construction at Tionesta and Crooked Creek; contract for the Mahoning concrete dam has been let. Johnstown—symbolic of flood disasters—is being protected by channel widening in the Conemaugh below the city. Concrete and earth flood walls are being built at Wellsville, Huntington, Kenova and Ironton on the main stem; are planned for numerous other localities, including Cincinnati with its baffling Mill Creek problem. These views are typical of the projects now under way.

RIVER, stay away from my door! A gate in the Wellsville, Ohio, wall.

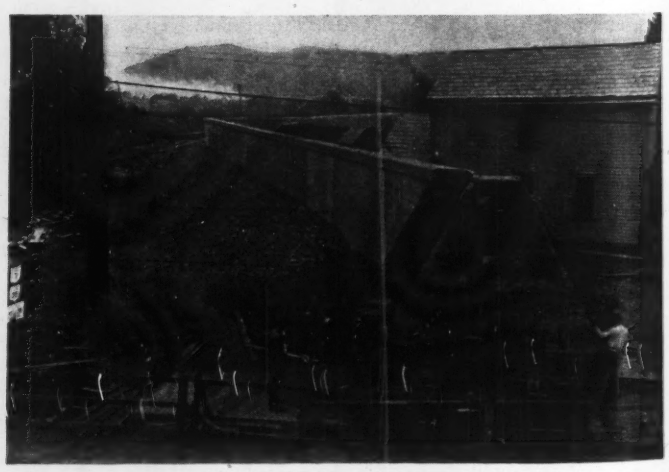


HUNTINGTON'S BARRIER against the rampaging Guyandot; similar walls protect the Ohio River front.



CHANNEL IMPROVEMENTS provide for faster departure of the Conemaugh floodwaters below Johnstown.

HIGH in the headwaters of the Allegheny, the Tionesta Creek Dam will hold back flood waters from Pittsburgh and the upper Ohio Valley.



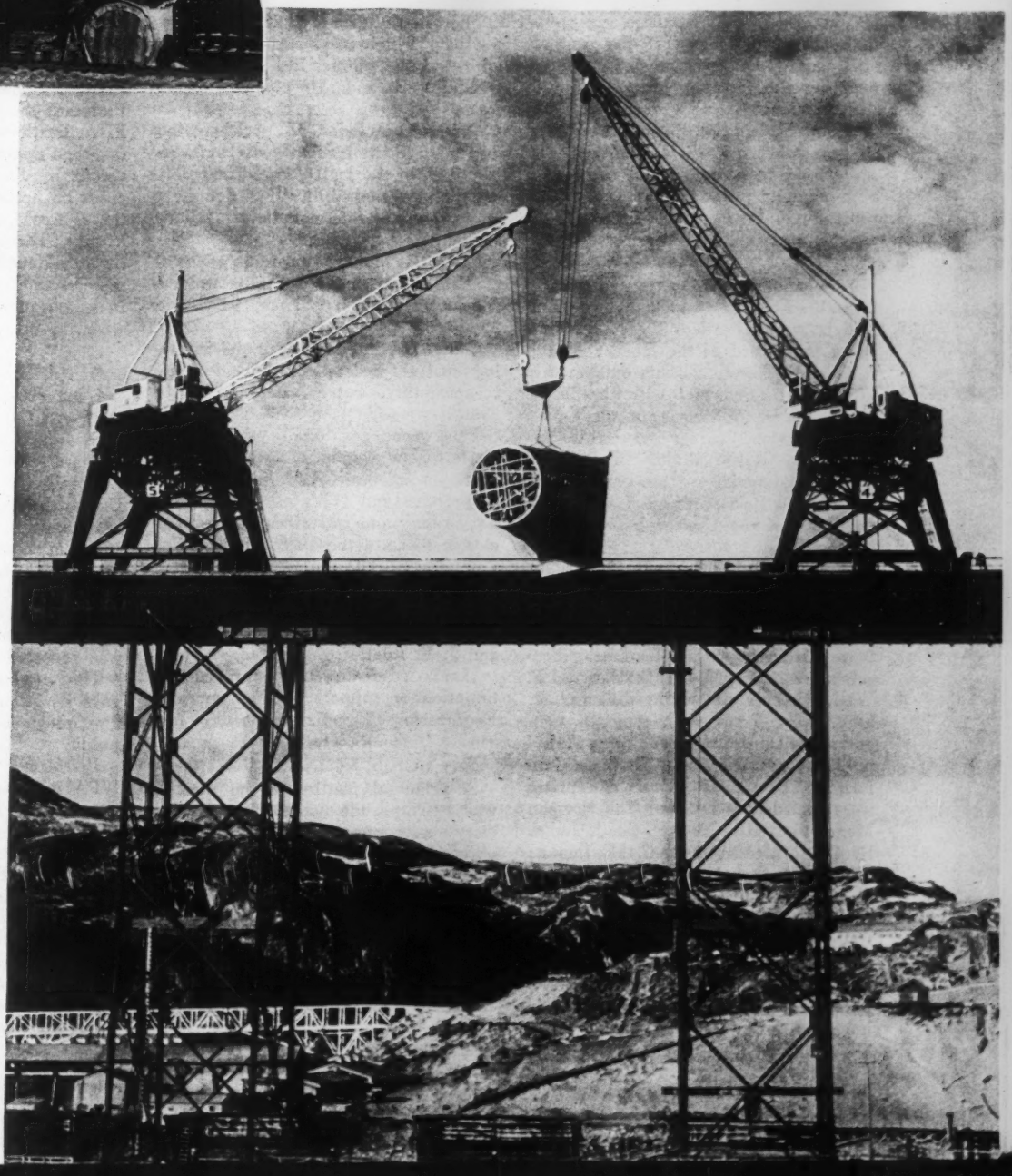
FLOODS higher than any on record will slide by Wellsville's new waterfront wall without harm to the city. Stop logs will close off this street opening.

Toward Power Generation At Grand Coulee

Now that contracts have been awarded for turbines and generators for the first three power units at Grand Coulee Dam, preparations for power generation have been keyed to a date—the time when the various phases of the undertaking will be completed to such a stage that the three units now on order (each including a 150,000-hp. turbine and a 108,000-kva. generator) can be assembled ready for service.

While the units are under construction in the East, contractors at Grand Coulee are setting steel penstocks 18 ft. in diameter and concreting around them. Steel plates are fabricated into penstock sections of convenient length at the large fabricating shop in the entrance to the Coulee whence they are brought by rail to within reach of cranes on the dam. Similarly the smoothly curved concrete chambers in which water will approach the penstocks are being carefully shaped in wooden forms in a yard near the dam. Cranes are used to set these form units in place near the upstream face.

A PENSTOCK SECTION, bulkheaded for test, is here being loaded in the fabricating yard for the 2-mi. rail haul to Grand Coulee Dam.



A 15 x 30-ft. opening in the concrete will be smoothly shaped by this form unit which is on its way to the upstream face.

American Society of Civil Engineers Acts on Engineers' Compensation

Annual meeting in New York featured by important action on salaries and eight technical sessions

Schedules of compensation for three grades of engineers were approved by the board of direction of the American Society of Civil Engineers at the annual meeting of the society held in New York, Jan. 18–21. This action marks the culmination of ten years of work on the part of the society's committee on salaries to define the several classes into which engineering work should be graded and to set fair and reasonable compensations for each class. While only three classifications are included in the present report, these classifications cover upwards of 75 per cent of civil engineering positions. Schedules for other classifications are to follow.

Professional matters dominated the meeting. In addition to the board's action on salaries, a whole afternoon was given over to a symposium on social, economic and professional status of the professions.

Honors conferred

The general meeting opened with a formal session at which honors and medals were awarded, the high point being the award of the Hoover Medal to John F. Stevens for his outstanding work at Panama and with the inter-allied forces in Siberia in the Great War. Stevens' career was ably reviewed by Ralph Budd. In Stevens' absence the medal was presented to his son Donald F. Stevens by Gano Dunn, chairman of the Hoover Medal Board of Award.

Honorary membership in the society was presented to C. Frank Allen, professor emeritus, M.I.T.; Anson Marton, dean emeritus of engineering, Iowa State College; Arthur S. Tuttle, consulting engineer, New York; Edward E. Wall, director of public utilities, St. Louis; and Frank E. Weymouth, general manager and chief engineer, Metropolitan Water District of Southern California. The society medals and prizes were awarded as follows: The Norman Medal to Hunter Rouse; the J. James R. Croes Medal to E. C. Hartmann; the James Laurie Prize to Leon S. Moisseiff; the Arthur M. Wellington Prize to Charles M. Noble; and the Collingwood Prize for Juniors to Douglas M. Stewart.

George T. Seabury, secretary, reported the society as having the largest membership in its history, 15,794, no debts, and a balanced budget of $400,000.

At the close of the general meeting the tellers reported the following new officers elected: Donald H. Sawyer, Washington, D.C., president, Charles M. Reppert and James L. Ferebee, vice presidents; H. W. Hudson, Harold M. Lewis, Sanford W. Sawin, Charles T. Leeds, Robert B. Brooks, and Edward S. Bres, directors.

Salary schedules

The three grades of civil engineering work for which the board of directors approved the publication of classification of work and salary range are as follows:

Grade I, includes all positions the duties of which involve civil engineering work of the least professional difficulty and responsibility, but definitely above the sub-professional class. Salary range, $2,040 to $2,520.

Grade II, includes positions of intermediate professional difficulty and responsibility. Salary range, $2,640 to $3,120.

Grade III, includes positions involving special professional difficulty and responsibility. Salary range, $3,300 to $3,840.

Each group has definitions which are set forth elaborately in terms of qualifications and duties classified by fields of practice and types of organization. Pay rates and classifications follow closely those of the U. S. Civil Service Commission. The committee which prepared the report is headed by E. P. Goodrich and includes A. B. McDaniel, E. O. Griffenhagen, Arthur Richards and J. E. Root.

The board of direction approved continuation of support of the American Engineering Council.

Professional objectives

A principal feature of the meeting was a symposium arranged by the society's new committee on professional objectives at which the objectives of the medical, legal and architectural professions were outlined as background for a discussion of the objectives of the engineering profession. Representing the three outside professions were Francis P. Sullivan, (architecture), Lyon Boston (law) and Dr. Charles Gordon Heyd (medicine).

E. R. Needles, chairman of the committee, outlined its program, and Carlton S. Proctor, director, in a paper presented by Prof. James K. Finch, reviewed the present position of the engineering profession. Discussions of several elements affecting the progress of the engineering profession were presented by V. T. Boughton, New York; H. Macy Jones, Los Angeles; Stanley H. Wright, Atlanta; Daniel C. Walser, Washington; and Prof. F. N. Menefee, Ann Arbor. In the absence of Jones and Walser their papers were presented by Walter Jessup, and W. W. DeBerard, who also contributed to the discussion.

City planning

Lively discussion in which Harland Bartholomew of St. Louis attacked Federal Housing Administration policies followed the three papers scheduled for the city planning division meeting. The discussion arose principally from the first paper, "Zoning and Other Protective Standards of the FHA," by Seward H. Mott, chief, Land Planning Section, technical division, FHA. Bartholomew asked whether garden-type apartments (such as are promoted by FHA) on the outskirts of cities do not spoil good lands between these areas and the central part of a city, adding that such structures by any fancy name are still apartments, and as such are undesirable in suburban one-family home districts.

Tests of large riveted joints

One of the most notable papers of the convention reported the results of static tension tests of large riveted joints made at the University of California. Presented by Raymond E. Davis, Glenn B. Woodruff and Harmer E. Davis, the paper covered the second half of the test program begun in 1934 in connection with the design and construction of the San Francisco-Oakland Bay Bridge; the first half of the program, on fatigue tests of smaller joints at the University of Illinois, was reported at the 1938 meeting.

The engineering-economics division gave its attention to public works and unemployment relief as permanent public problems. Robert L. MacDougall, former state engineer for the WPA in Georgia spoke chiefly on lessons learned in that agency, Stanley H. Wright, regional engineer for the PWA at Atlanta reviewed the work of the PWA, and Frederick H. MacDonald, Atlanta, chairman of the division, discussed the need for a definite national policy on unemployment relief. Each speaker noted the continuing character of the problem and all urged a national set-up that would permit proper advance planning of relief work.

Rivet shear strength is not greatly affected by lengthening the joints; the strength of a rivet surface in double shear may be as low as 80 per cent of the strength in single shear; the strength of the plates in a riveted joint is not directly proportional to the area of the net section, as commonly assumed in practice (this was one of the outstanding conclusions); the use of fewer rivets in the end rows than in interior rows is ineffective; wide spacing of end row rivets is undesirable, and about 4-diameter spacing proved most efficient; regardless of the number of rivets in the end row, the net section taken at the row having the greatest number of rivets correlated better with the observed strength than did the net section computed by standard specifications; there was little difference in efficiency between butt and shingle splices. The tests indicated that the usual design assumption of uniform partition of stress among rivets is as reasonable as any that can be made.

In discussion Prof. W. M. Wilson (University of Illinois) presented an empirical formula for determining the net section which gave results more consistent with the test results than does the A.R.E.A. specification formula; a factor in the formula takes transverse spacing of the rivets into account. C. F. Goodrich (American Bridge Co.), in commenting on the low loads at which slip occured in a number of the tests, pointed out that this was not a serious matter inasmuch as the slip disappears as soon as the rivet comes into bearing; he also emphasized the fact that it is difficult to improve on the rivet holes, as now made in good practice.

Shortridge Hardesty expressed preference for designing on the basis of gross section, stating that failures occur from load concentration at the edge of rivet holes, and that these concentrations are not affected by the number of holes. Leon S. Moisseiff pointed out that the report of these tests, like reports of other important investigations, includes a great deal of information that cannot be expressed in conclusions, and urged that it be studied so that we may learn of the behavior as well as the ultimate strength of joints.

Wind Design

The committee on wind design presented its sixth progress report since it began work in 1930. Principal emphasis was laid on a recommended increase in the wind force to be used in design. The previous recommendation of a straight line increase up to 20 lb. per sq. ft. at the 500 ft. level is maintained, but instead of a 2 lb. increase for every 100 ft. above that level a 3.8 lb. increase is recommended; this gives 37.5 lb. per sq. ft. at 1,000 ft. and 55 lb. at 1,500 ft. The change, according to C. R. Young, chairman, is a result of more mature consideration of the possibilities of gust, hurricane and tornado effects on buildings in large cities.

A part of the report was a paper by Prof. George E. Large (Ohio State University) on torsion in building frames. In attempting to increase stiffness of certain bents to provide resistance to torsion, Prof. Large indicated that the studies showed the fallacy of heavying the girders unduly since a major part of the total deflection often comes from chord stress, that is, shortening and lengthening of the columns.

Sanitary engineering

A paper on activated sludge treatment and one on milk sanitation comprised the technical program provided for the sanitary engineering division. The balance of the meeting was taken up with progress reports of committees, and the passage of a resolution protesting a report of the National Health Officers Qualifying Board which has recommended "that only physicians be eligible to serve as health officers in American cities."

The resolution, presented by L. H. Enslow, member of the executive committee of the division, stated that the recommendation made to the U. S. Conference of Mayors limiting the health officer field to physicians, is inconsistent with proven public health practice and is illogical.

Making a final report for the committee on water purification research and plant design, Joseph W. Ellms, chairman, said that the work of this group has culminated in the production of a manual on water plant design. The manual outlines present day practice, and contains recommendations for the design of all units in water purification plants.

Waterways

Two very informing talks on the effect of the New England hurricane on shore protection structures were presented at the meeting of the waterways division. Col. C. L. Hall, district engineer for the U. S. Army at New York, told of happenings on the Long Island shore, and Richard K. Hale of the Massachusetts Department of Public Works, told of storm effects along the coast of his state. Both reported surprisingly small injury to well-built bulkheads, groins and walls. The great damage to dwellings along the coast resulted from the high tide which carried storm waves far above walls and bulkheads.

LABOR NOTES

THE CONCRETE PONTOON bridge across Lake Washington at Seattle will be built with union labor, it was decided last week when contractors for the eleven units of the $8,000,000 project signed a wage and hour agreement with the Seattle building trades council. The agreement provides for a five-day 30-hr. week and for the same wage scale as was agreed to several months ago by the Seattle chapter of the Associated General Contractors. The rate for common labor, which has been $1 an hour on heavy construction in the Seattle area, was reduced in the new contract to 90 cents, the rate prevailing on building work.

A BONUS PLAN has been instituted by Consolidated Builders, Inc., on certain work at the Grand Coulee dam. Workers on the excavation for twelve pumping plant discharge pipes have been assured that if the actual field costs are less than $6 per cu.yd., one-third of the saving will be distributed among the men; the other two-thirds will go to four zone superintendents.

SIXTY-SIX EMPLOYEES of the Ohio state highway department in the Lima district have obtained a charter as a local of the AFL Federation of State, County and Municipal Employees.

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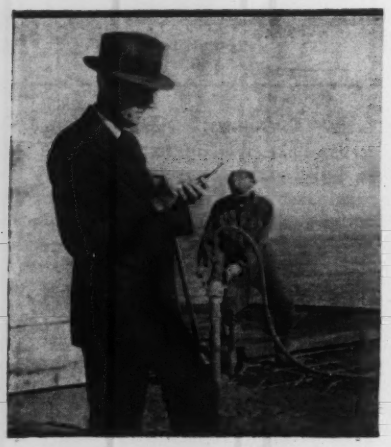
Quoddy and Florida Canal Revival Urged

(*Continued from p. 1*)

building of it is justified today by commercial and military needs."

Construction on the canal was halted by Congress in 1936 after about $5,400,000 of WPA funds had been spent on it by Presidential order. Later, the Chief of Engineers approved the project, estimating that tolls would pay maintenance and amortize the cost without interest over a period of years.

Discussing the Passamaquoddy project in his letter, the President reiterated his belief "that the time will come when there will be joint agreement between Canada and the United States for the joint development of the larger project which would utilize all tidal power in that bay on both sides of the international line." He drew attention to the depressed economic conditions in eastern Maine and urged that an appropriation be made for the completion of test borings in order to determine the advisability "of putting in a small experimental plant on the American side of the border."



Frank G. White, for 23 years chief engineer, Board of State Harbor Commissioners for San Francisco harbor, has been designing and building wharves for that city since 1911. During this time the entire 5-mi. length of the city's intensively developed waterfront has been built or rebuilt, and pioneer work has been done in reducing risk to concrete exposed to salt water.

Twenty-year-men with Pacific Gas & Electric Co. are **J. E. Cooney** (left) and **Hector Keesling,** shown conferring on the company's 11-mile Stanislaus tunnel job on which Cooney is superintendent of construction. Keesling, the company's mechanical expert on construction equipment, and Cooney, practrical construction man, made an efficient team on this hard-rock bore.

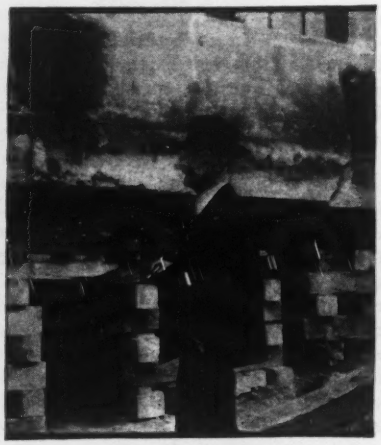
Gazing into the muddy foundation trench of the new Richmond, Va., river-front terminal wall are **J. E. Jones,** (left) superintendent for contractor Arve S. Wikstrom, and **Tom L. Cockrell,** chief of the city bureau of sewers and bridges and engineer in charge of construction of the terminal. Wellpoints are drying the mud and, despite tough going, construction of the big 1,250-ft. gravity wall is well along.

MEN AT WORK

Since 1925 **Frank C. Tolles** has been one of George B. Gascoigne's associates in Cleveland, specializing in preliminary studies and reports on sewerage and water supply projects, and also in problems of refuse collection and disposal. Among the projects he has worked on are sewerage for Buffalo and a sewage works for Fort Wayne. During the World War he was a captain in the 112th Engineers.

The Richmond, Va., department of public works is on the move these days, for its famous aluminum and steel office building is being rolled down the street a block to a new location without interfering with the normal office routine. Assistant director of public works **James Bolton,** in charge of the moving for the city, inspects the cribbing and track. A new state library will occupy the old site.

Byron H. Eich (left), Camp Bair CCC superintendent for the Bureau of Reclamation, points out to construction engineer **Ralph Lowry** where CCC crews are cutting brush and timber out of the area to be flooded by Shasta Reservoir. Lowry, formerly in charge of work on Boulder Dam, is now directing operations at Shasta Dam in which capacity he is director of the CCC companies clearing the reservoir.



MEETINGS

NATIONAL SOCIETIES

ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS, annual meeting, Stevens Hotel, Chicago, Jan. 31-Feb. 1.

NATIONAL PAVING BRICK ASSOCIATION, annual meeting, Deshler-Wallick Hotel, Columbus, Ohio, Feb. 1-3.

AMERICAN TOLL BRIDGE ASSOCIATION, annual convention, Coronado Hotel, St. Louis, Mo., Feb. 6-8.

AMERICAN CONCRETE CONTRACTORS ASSOCIATION, National Concrete Masonry Association, Illinois Builders League; third annual concrete industries convention and exposition; Sherman Hotel, Chicago, Feb. 7–9.

ENGINEERING INSTITUTE OF CANADA, annual meeting, Chateau Laurier, Ottawa, Feb. 14-15.

ASSOCIATION OF HIGHWAY OFFICIALS OF NORTH ATLANTIC STATES, annual convention, Hotel Pennsylvania, New York City, Feb. 15-17.

SOUTHWEST ROAD SHOW AND SCHOOL, Coliseum, Wichita, Kan., Feb. 21–24.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS and Louisiana Engineering Society, Spring meeting, St. Charles Hotel, New Orleans, Feb. 23-25.

AMERICAN CONCRETE PIPE ASSOCIATION, annual convention, Hotel St. Francis, San Francisco, Feb. 23-25.

THE ASPHALT INSTITUTE, twelfth national asphalt conference, Biltmore Hotel, Los Angeles, California, Feb. 27–March 3.

AMERICAN CONCRETE INSTITUTE, annual convention, Roosevelt Hotel, New York City, Mar. 1-3.

AMERICAN SOCIETY FOR TESTING MATERIALS, spring group meeting, Columbus, Ohio, Mar. 6-10.

ASSOCIATED GENERAL CONTRACTORS OF AMERICA, annual convention, Palace Hotel, San Francisco, Mar. 6-11.

NATIONAL EQUIPMENT DISTRIBUTORS ASSOCIATION, annual convention, San Francisco, Mar. 6-11.

WESTERN ASSOCIATION OF STATE HIGHWAY OFFICIALS, annual convention, San Francisco, Mar. 6-11.

AMERICAN ROAD BUILDERS ASSOCIATION, national exhibit and road show, Civic Auditorium, San Francisco, Mar. 6-11.

REGIONAL AND LOCAL

AMERICAN RAILWAY ENGINEERING ASSOCIATION, annual meeting, Palmer House, Chicago, March 14-16.

CASE SCHOOL OF APPLIED SCIENCE, road school, Cleveland, Feb. 2-4.

BUREAU OF ENGINEERING RESEARCH and College of Engineering of the University of Texas, annual conference on foundations and soil mechanics, Austin, Feb. 3-4.

ASSOCIATED GENERAL CONTRACTORS OF AMERICA, Carolina branch, Hotel Charlotte, Charlotte, Feb. 8-9.

OHIO SOCIETY OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS, annual convention, Cincinnati, Feb. 8-10.

IOWA ENGINEERING SOCIETY, annual meeting, Hotel Fort Des Moines, Des Moines, Feb. 15-16.

LOUISIANA ENGINEERING SOCIETY, annual meeting, jointly with spring meeting of American Society of Mechanical Engineers, St. Charles Hotel, New Orleans, Feb. 23–25.

AMERICAN SOCIETY OF CIVIL ENGINEERS, Mid-South Section, spring meeting, State College, Miss., Mar. 17.

CONNECTICUT SOCIETY OF CIVIL ENGINEERS, annual meeting, Strathcona Hall, New Haven, March 21-22.

Wide World Photo

WHY NEW YORK TEARS DOWN TENEMENTS

GRAPHIC ILLUSTRATION of the reasons behind the efforts of New York City to repair or demolish old law tenement buildings in dangerous condition was provided Jan. 21 when the front of an untenanted building on Manhattan's central west side, the old Hell's Kitchen district, collapsed into the street.

The failure occurred about noon but no one was in front of the building at the time so that there were no injuries or deaths.

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Full Contract Pay Required On Uncompleted Job

The Supreme Court of Canada, upholding a lower court decision, has ordered the Dominion Construction Corp. of Toronto to pay $32,000 to the Raymond Concrete Pile Co. in payment for piles the Raymond company did not drive.

When the Raymond company was awarded the subcontract to drive 2,340 piles for the foundations of the Victoria Park pumping station at Toronto, the price was set at $67,000 and no provision was made for deduction if fewer piles were required. After 915 piles had been driven, the Toronto commissioner of works suspended pile driving, acting in accordance with the city's contract with the Dominion corporation, and no further piles were used. The Dominion corporation refused payment for piles not driven.

Sewer Revenue Bonds Widely Used

New York State Sewage Works Association hears discussion of finance and law

A symposium on sewer service charges and a discussion on the legal aspects of stream pollution highlighted the meeting of the New York State Sewage Works Association in New York City, Jan. 20. Honored by the association with the Kenneth Allen Memorial Award was Charles B. Agar, sanitary engineer of the New York State Department of Health, for a paper on the practical methods for prevention of dairy waste nuisances, presented last year.

Thirty-five states, it was pointed out in the symposium, now have enabling acts permitting the use of revenue bonds for sewerage financing, and five others have charter provisions through which the use of sewer service charges can be employed. Stimulated by PWA requirements concerning self-liquidating projects, and forced by constitutional debt limitations to adopt new means of financing sewage facilities, many municipalities are using revenue bonds secured by service charges. There are eighteen different methods of making these charges, only about half of which are based on a percentage of the amount of water used by the consumer. In most places the law permits the money thus obtained to be used for construction as well as operation and maintenance of sewers and treatment plants.

At Columbus, where sewer service charges were adopted a year ago, there has been only 10 per cent delinquency in pavement of these charges. Most of these delinquencies were attributed to the activity of a citizen organization that has protested the charges.

Taking part in the symposium were: R. C. Sweeney, district engineer, New York State Department of Health; M. W. Tatlock, consulting engineer, Dayton, Ohio; R. A. Allton, consulting engineer, Columbus, Ohio; and W. F. Tempest, highway and municipal bureau, Portland Cement Association, Chicago.

The law is well established and the principles laid down are adequate to take care of the legal problems concerning stream pollution, said James A. Tobey, member of the New York Bar. It is in the application of the law that difficulties are encountered, and this points to the need for stronger methods of enforcement. Control of pollution he held to be more than the establishment of legal doctrines, which form merely the framework for the solution of a problem involving public consciousness, administrative procedure, and economic consideration.

Pollution, which is an alteration of the quality of water, is not a reasonable or natural use of that water. And since it creates a nuisance, pollution is sufficient cause for action to recover damages or to seek other legal remedies. Recognition of these principles is part of common law doctrines.

Legislation to control pollution is a valid exercise of the police power of the state and is necessary as a means for establishing and charging specific authorities with responsibility for pollution abatement. Control of stream pollution, concluded Tobey, is primarily a state function.

Officers elected for the coming year were: N. L. Nussbaumer, president; George C. Anderson, vice-president; A. F. Bedell, secretary-treasurer; and J. C. Brigham, assistant treasurer.

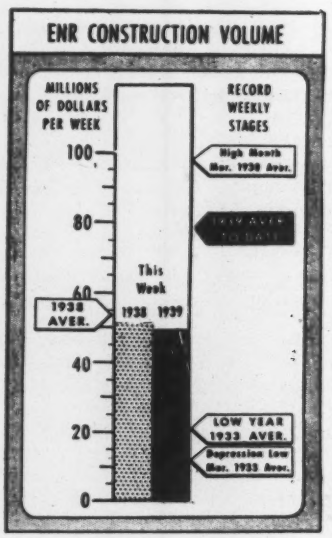
CONTRACTS AND CAPITAL

ENGINEERING construction awards for the week, $49,483,000, are 11 per cent below last week, and 2.5 per cent below the corresponding week last year. This is the first 1939 week that failed to exceed the 1938 values, and it is the first time in 9 weeks that current values dropped below their respective totals for a year ago.

Construction awards for 1939 to date, $311,693,000, are 64 per cent higher than for the initial 4-week period in 1938.

Public construction for the current week is 6.5 per cent lower than last week, but 22 per cent above last year. Private construction is 21 and 37 per cent lower, respectively, than a week ago and a year ago.

In the classified construction groups, gains over last week are in waterworks, sewerage, bridges, industrial buildings, earthwork and drainage, and unclassified construction. Waterworks, sewerage, bridges, streets and roads, and unclassified construction report increases over their respective totals for the 1938 week.



New capital for construction purposes for the week, $11,896,000, is 11 per cent below the corresponding 1938 week. The current week's total is made up of $10,896,000 in state and municipal bonds, and $1,000,000 in corporate security issues.

New construction financing for the 4 weeks of 1939 totals $69,550,000, a 57 per cent increase over the $44,399,000 reported for the 4-week period last year.

CONTRACTS

(Thousands of dollars)

	Week Ending Jan. 27 1938	Jan. 19 1939	Jan. 20 1938
Federal	$5,630	$3,369	$3,978
State & Municipal	23,937	35,255	32,137
Total public	$29,567	$38,624	$36,115
Total private	21,182	16,865	13,368
TOTALS	$50,749	$55,489	$49,483
Cumulative 1939 (4 weeks)			$311,693
Cumulative 1938 (4 weeks)			$190,186

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1938 4 Ww.	1939 4 Wk.
NON-FEDERAL	$44,399	$69,550
Corporate securities	10,990	18,645
State & Mun. bonds	30,268	42,867
R.E.A. loans	.....	8,038
R.F.C. loans	2,000	.....
PWA allotments	1,141	.....
FEDERAL	.....	.....
TOTAL CAPITAL	$44,399	$69,550

FHA MORTGAGES

	Week Ending Jan. 22 1938	Jan. 14 1939	Jan. 21 1939
Selected for appraisal	$7,300	$16,767	$18,000*
Cumulative 1939 (3 weeks)			$48,156*
Cumulative 1938 (4 weeks)			$25,158

* Subject to revision.

ENR INDEX NUMBERS

Index Base		1913	1926
Construction Cost	Jan.	234.72	112.83
Building Cost	Jan.	196.24	105.99
Volume	Dec.	249	109

CONSTRUCTION REPORTS

Engineering and building projects by stage of progress and type reported by ENR correspondents

Construction projects reported in these pages covering the United States and Canada, are of these designated sizes: water supply, earthworks, waterworks, $15,000 and over; other public works, $25,000 and over; industrial buildings, $40,000 and over; other buildings, $150,000 and over; covering foreign construction, $500,000 and over.

They are classified in the following groups, named in the order of their publication: Water Supply . . . Sewers, Waste Disposal . . . Bridges, Grade Crossings . . . Streets and Roads . . . Earthwork, Waterways . . . Unclassified . . . Materials, Equipment . . . Public Buildings . . . Commercial Buildings . . . Industrial Buildings.

They are reported in these stages: proposed (except Streets and Roads); bids asked; low bidders (projects of $500,000 and over); contracts awarded. Where a previous report has been carried the issue date is noted on the current report. In each stage reports are arranged in geographical order, first by state then by city or town.

Symbols and abbreviations include:
† Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD McGraw-Hill Construction Daily

WATER SUPPLY

PROPOSED WORK

Idaho, Idaho Falls—Imprv. water sys., taking up c.i. mains, replacing larger mains. $50,000. Project abandoned. C. Black, city engr. CD 12/7.

Idaho, Moscow—300,000 gal. reservoir. Over $15,000. H. J. Smith, City Hall, engr.

Ill., Oak Lawn—Iron removal and water softening plant. Over $15,000. E. Hancock Eng. Co., engrs.

Ia., Castle Hill (Waterloo P. O.) — J. B. Knowles, town clk., RFD, Waterloo, $11,000 bond election soon, 12,000 ft. watermain to connect with Cedar Falls. $20,000. C. Steeter, city engr. CD 12/23—ENR 12/29.

Ky., Science Hill—Postponed bids to have been opened Jan. 31, Contr. 2, pump sta. and distr. sys. $28,000; Contr. 3, tank $7,750. New date to be set soon. H. de B. Forbes, Richmond, Ky., engr.

Mass., Lanesboro—Town, new bids in February, Contr. 2, WW sys., concrete reservoir pipe lines, pump sta. equip., etc., in connection with wells. Total est. $35,000. S. M. Ellsworth, 12 Pearl St., engr. Former contract rescinded. CD 12/30—1/5, under C.A.

N. J., Hoboken—Replacing old 12 in. watermain with new 12 in. c.i. main Willow Ave. from Ferry to 13th Sts. $145,555. WPA. T. E. Lynch, 1 Newark Ave., Jersey City, WPA and owner's engr.

N. Y., Frewsburg—Carroll Town Bd., temporarily abandoned plans WW and distr. sys. $110,000. May be revived at an early date. Wm. S. Lozier, Inc., 10 Gibbs St., Rochester, engrs. CD 10/5—ENR 10/13.

★**N. Y., Kenmore**—C. F. Lane, mayor, water supply sys., incl. pump. sta., filtration plant, reservoir, water lines. $685,000. G. B. Gascoigne, Leader Bldg., Cleveland, O., archt.

N. Y., Oswego—Preliminary survey 12 mi. 6 in. watermain exten. into Oswego Center and vicinity. C. Snyder, city engr.

N. Y., Watervliet—Common Council, additional imprvs. to WW sys., incl. extensive electrification of equip., etc. $20,000. Solomon & Keis, 257 Bway., Troy, engrs. CD 8/16—ENR 8/18.

Okla., Muskogee—S. M. McManus, mayor, boilers and pumps for WW. $30,000. B. Patrick, Muskogee, engr.

R. I., Pawtucket—Bids in 2 weeks, water filtration plant, Happy Hollow Rd., Cumberland. $400,000. PWA. C. A. Maguire, 613 Turks Head Bldg., Providence, engr. CD 11/16—ENR 11/24, under C.A.

★**R. I., Providence**—4 additional filters, remodeling plant, electrification of controls, chemical feeding equip. and material handling sys. $600,000. PWA. Bids in about 3 weeks on part of project. J. F. Collins, mayor. CD 11/30—ENR 11/8.

Tex., Daingerfield—C. S. Truitt, new bids soon concrete tank and metered distr. sys., sanitary sewerage sys. and disposal plant. $75,000. Former contract rescinded. C. Chappell, Pittsburgh, engr. CD 1/11—ENR 1/19, under C.A.

Alta., Edmonton—A. W. Haddow, engr., City Hall, watermain renewals. $20,000.

B. C., Kamloops—A. W. Jackson, city clk., water filtration plant. $35,000. Engineer not appointed.

Ont., Sudbury—J. T. Dionne, clk., McKim Twp., bids early spring exten. watermains to new subdivision of Gatchell. $32,000. W. B. McMullen, Sudbury, engr. CD 11/4—ENR 11/10.

Que., Montreal—J. A. Blanchard, dir. P. Wks., City Hall, watermain to property of Canadian Car & Fdry. Co. Ltd., Cote St. Paul Rd. $18,000.

BIDS ASKED

Bids Asked January 31

Mich., Bridgeport Twp.—Test wells and 8 in. well for water supply. Part of $66,000 project. Francis Eng. Co., 303 Eddy Bldg., Saginaw, engrs.

Bids Asked January 31

★**O., Cincinnati**—H. F. Wagner, city purch. agt., laying watermains in connection with WW. imprvs. Total est. $1,429,091. PWA. J. E. Root, City Hall, engr. CD 7/5—ENR 7/7.

Bids Asked February 2

Miss., Clarksdale — T. M. Dye, mayor, 2 steam generating units, boilers, stokers, auxiliary equip. for power plant. $30,000. PWA. Stevene & Johnson, Starkville, engrs. CD 10/6—ENR 10/13.

North Carolina — State Hy. & P. Wks. Comn., Raleigh, drilling well at Ashe Co. and Cherokee Co. Prison Camps. $2,200. W. L. Craven, Raleigh, engr.

Bids Asked

Mass., Newburyport — Water Dpt., watermains, pump, sta. $50,000. PWA. Whitman & Howard, 89 Broad St., Boston, engrs.

Que., St. Hyacinthe—M. A. David, city clk., aerator for WW. $12,00. J. Bouchard, St. Hyacinthe, engr. CD 8/17—ENR 8/25.

LOW BIDDERS

★**Pa., Bethlehem**—Bethlehem Water Auth., Jan. 13, 23 mi. water supply line, etc., Type A construction, from Lock Joint Pipe Co., Box 21, Ampere, N. J., $1,019,130***Type B construction, from T. M. Flanagan, 2455 Cumberland Ave., Mt. Penn, Reading, $1,136,137. CD 1/4—ENR 1/5.

CONTRACTS AWARDED

Conn., Colchester—Town, Contr. 3, two 1 story, 12x18 ft., brick, steel, concrete pump. stas., storage pump. and distr., to Bartlett-Brainard Co., 16 Van Dyke Ave., Hartford. Total est. **$100,000. PWA.** Bids 12/28. CD 12/23.

Conn., Hartford—Bd. Contr. & Supply, Metropolitan Dist., 550 Main St., Contr. 39, 30 and 36 in. steel water supply, Park Terrace, Ward Washing, Hamilton Sts., Hillside Ave., Part 3, Oakwood Ave. watermain, to Bronx Water Works Corp., Eastern Blvd. and E. 177 St., New York, **$82,255**; Contr. 40, for 4- to 12-in. c.i. waterpipe, to Florence Pipe Fdry. & Machine Co., 400 Chestnut St., Phila., Pa., **$23,176.** Bids 1/9. CD 12/13 and 12/30—ENR 12/15 and 1/5 respectively.

Fla., Orlando—Contr. 2, c.i. pipe, valves, hydrants, to M. R. Boyce Co., Clearwater, **$119,835. PWA.** Bids 1/9, awarded 1/12.

Ga., McIntyre—Drilled well, to J. R. Connally, Varnville, S. C., **$1,369.** Bids 12/21. CD 12/7—ENR 12/15.

Ill., Oakwood—Water supply, distr. sys., **WPA. $42,136.** Bids 12/29. CD 12/23.

Ind., Dyer—Elevated tank, to Chicago Bridge & Iron Co., 37 W. Van Buren St., Chicago, Ill., **$12,900***concrete block storeroom, to Vogt & Slather, 5874 Calumet Ave., Hammond, **$4,526***distr. line, to T. F. Cloghessy, 793 Logan St., Hammond, **$2,803.** Grand total $20,228. Bids 12/16. CD 12/7.

Ia., Manning—WW. imprvs., 120,000 gal. rein.-con. reservoir, to Schroeder & Axman, Oldham, **$4,375**; pump. equip., to Interstate Mchy., 1006 Douglas St., Omaha, Neb., **$3,320.** Bids 1/11. Rejected bids 1/11 c.i. watermains. CD 12/14—ENR 12/22.

★**Kan., Kansas City**—A. R. Hutchinson, clk. Wyandotte Twp., exten. water distr. sys., **WPA. $1,000,000.** C. A. Haskens, Finance Bldg., Kansas City, Mo., engr.

Kan., Narka—WW. imprv., **WPA. $40,000.** Paulette & Wilson, 1006 Kansas Ave., Topeka, engrs. CD 7/14—ENR 7/21.

Kan., Sharon—Drilling, completing gravel wall well and pump, pumphouse, etc., to Wichita Pump & Supply Co., Wichita, **$2,126.** Bids 12/23. CD 12/13—ENR 12/15.

Ky., North Middletown—Digging wells in connection with water and gas sys., to Stanhope Weideman Co., Lexington. Est. **$2,500.** Bids 1/6. CD 12/28.

Ky., Owensboro—Contr. 5, Item 2, surface condenser, to Condenser Service Eng. Co., 310 12th St., Hoboken, N. J., **$31,660. WPA.** Bids 11/16, awarded 1/12. CD 11/7—ENR 11/10.

Mass., Lowell—R. E. Runels, supt. Water Dpt., City Hall, water service, Pawtucket Blvd., artesian wells, pump. sta., pumps, etc., **WPA. $298,500.** CD 12/9—ENR 12/15.

Mich., Clawson—Water distr. sys., to R. D. Baker Co., 15440 W. 7 Mile Rd., Detroit, **$82,575.**

Mich., East Lansing—200,000 gal. tank, to Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa., **$17,300. PWA.** Bids 11/14. CD 11/3.

Mich., Flint — Beecher Metropolitan Dist., Genesee Co., at office their engineer, 736 Evergren St., 3 test wells, 2 supply wells and pump. equip., to L. L. Oberlin, 265 Crystal Lake Dr., Pontiac, **$6,747.** Bids 12/12. CD 12/5.

Mich., Hazel Park—WW. imprv., to R. D. Baker, Contg. & Eng. Co., 720 E. 10 Mile Rd., Royal Oak, **$8,250.**

Mich., Hazel Park—C.I. watermains, to C. Nelsen Co., 117 Phillips Pl., Royal Oak, **$56,501. PWA.** Bruce Buchanan, Inc., Pontiac, engrs.

Minn., Kensington—A. L. Osterberg, village clk., tank, etc., to Pittsburgh-Des Moines Steel Co., 1015 Tuttle St., Des Moines, Ia., **$5,635**; pumps, to Crane Co., 5 St. and Broadway, St. Paul, **$1,185. PWA.** Bids 1/3. CD 12/20—ENR 12/22.

Neb., Stanton—Imprv., exten. water sys., **WPA. $16,000.** H. Kuester, city engr.

N. Y., Buffalo—Dpt. P. Wks., City Hall, additional imprvs. water supply sys., laying new water lines. **WPA.** Over **$25,000.**

N. Y., Penfield—Village, 5.6 mi. watermains, hydrants, **WPA.** Over **$20,000.**

N. Y., Troy—Dpt. P. Wks., City Hall, 16 in. watermain from Quackenskill Reservoir to here, **WPA.** CD 1/13—ENR 1/19.

N. C., Washington — Sect. 1, water and sewer connections, to G. T. Spruce, Burlington, **$21,061***Sect. 2, tank, to Chicago Bridge & Iron Co., 1500 N. 50 St., Birmingham, **$24,245***Sect. 3, 4,500 lin. ft. creosoted timber piles, ot W. M. Muirhead Constr. Co., Durham, **$6,380***Sect. 4, excav., catch basins, manholes, curb, gutters, sewer lines, concrete paving, storm sewers, expansion joints, to F. J. McGuire, Wash., D. C., **$20,276.** Grand total $71,962. Bids 12/30. CD 12/19—ENR 12/22.

O., Marietta—Treatment plant, to Bever & Morris, Inc., Blackstone Bldg., Cleveland, **$218,000.** Total est. $324,716. **PWA.** Bids 12/16. CD 12/9.

Okla., Alva—Watermain exten., **WPA. $31,000.** R. Houghton, Alva, engr.

Okla., Verden—Drilled well, motor pump and pumup house, to Shuler Well Co., 611 West Noble St., Oklahoma City, **$2,744.** Est. $3,500. Awarded 12/29.

Pa., Harrisburg—W. T. DeHart, Public Safety Dir., City Hall, laying 2½ mi. 42 in. coated steel pipe line from Clarks Valley Water Source, to Columbia Foundation Co., 4 and Cortland Sts., Phila., **$138,391.** Former contract rescinded. Bids 12/28. CD 1/3—ENR 1/5 under "CA."

Tenn., Knoxville — W. M. Myatt, mayor, WW. imprvs., pump plant, machine shop, to Burford-Hall & Smith, 140 Edgewood Ave. N.E., Atlanta, Ga., **$161,573.** Bids 1/12. CD 12/20—ENR 12/22.

Tex., Branham—R. B. Lockett, mayor, WW. imprvs., new c.i. mains, connections, fire hydrants, manholes, etc., "Purchase and Hire" plan. **WPA. $15,996.** L. Beazley, city engr.

Tex., Commerce — Imhoff tank, dunbar beds, sludge beds, connecting lines at disposal plant, "Purchase and Hire" plan. **WPA. $35,845.**

Tex., Houston—O. Holcomb, mayor, additional mains, imprv. sys., to Gulf Paving Co., 1401 W. Alabama St., **$111,338.** Bids 1/4. CD 12/29.

Waterworks (Continued)

Tex., Jacksboro — S. F. Borden, mayor, imprv. water distr., 100,000 gal. concrete water reservoir, **WPA. $39,499.** O. S. Funk, Bridgeport, engr.

Tex., Kerens—Concrete spillway and destroy old chute at city lake, "Purchase and Hire" plan. **$26,013. WPA.**

Wyo., Jackson — Watermain exten., **WPA, $49,870.** CD 7/28—ENR 8/4.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Ill., Peru—Primary treatment plant, separate sludge digestion chemical precipitation. $125,000. PWA. Consoer, Townsend & Quinlan, 205 W. Wacker Dr., Chicago, engrs.

★**Ill., Rock Island**—Bids soon, Sect. 3, intercepting sewers lower Mississippi River, bids later Sect. 4, sewage treatment plant. PWA. Total est. $3,000,000. Consoer, Townsend & Quinlan, 205 W. Wacker Dr., Chicago., engrs. CD 1/14—ENR 9/22.

Ia., Eldora—Iowa State Boys Training School, sewage disposal plant. $40,000. Engineers not appointed.

Mass., Boston — Commonwealth of Massachusetts, Metropolitan Dist. Comn., Sewer Div., W. E. Whittaker, secy., 20 Somerset St., Boston, rejected bids Dec. 22, Sect. 101, North Metropolitan Relief Sewer (syphon, etc.), Chelsea and East Boston. Will probably revise plans. PWA. CD 12/29—ENR 1/5, under "Low Bidders."

N. J., Clifton—Boro, repairing storm sewers, various streets, $32,534; sanitary sewers, Scoles Ave., $27,205. WPA. W. Burke, foot of 5th Ave., Paterson, WPA and owner's engr.

N. J., Hoboken—Reconstructing manholes, catch basins, water gate boxes, appurtenance work, resetting Belgium blocks, etc., various streets. $283,106. T. E. Lynch, 1 Newark Ave., Jersey City, WPA and owner's engr.

N. Y., Endicott—Sewers in and near Nanticoke Ave., and paving afterwards. $65,000. **Maturity spring.** C. F. Hunt, Village Hall, engr.

N. Y., Kingston—Bd. P. Wks., sewage disposal plant. $100,000 plus. J. J. Norton, city engr.

N. Y., New York—President Bronx Boro, 851 Grand Concourse, trunk sewer, to remove pollution from waters of Orchard Beach, City Island. $250,000.

N. Y., Utica—Dpt. P. Wks., City Hall, additional culverts, various sections, as flood control measure. $25,000 plus. J. B. Shaw, City Hall, engr.

Okla., Jay—Sanitary sewerage sys. $30,000. Submitted to WPA. Alexander & Pollard, Terminal Bldg., Oklahoma City, engrs.

Wash., Camas—B. G. Smith, engr., City Hall, sewerage sys., Evergreen Terrace. $54,000. WPA asked to allot $43,000 for labor.

Wash., Yakima—G. Clark, comr. P. Wks., sewerage sys. interritory bounded by Chestnut St., Stanley Blvd., Home and Tieton Drs. $111,871. WPA asked to allot $93,512 for labor. A. B. Collins, City Hall, engr

Ont., Glanworth—Westminister Twp., C. Kirk, clk., sewerage sys. F. A. Bell, St. Thomas, engr.

Ont., London—W. Veitch, engr., City Hall, sewers, Victoria St. $40,000.

Ont., Ottawa—Chairman and Members Bd. Control, bids during 1939, watermain exten., various streets. $60,000. W. E. MacDonald, City Hall, engr.

Ont., Simcoe—J. Holden, mayor, incinerator. Wants prices and information regarding equip. suitable for town 5,500. G. R. Marston, Town Hall, engr. CD 7/29—ENR 8/4.

BIDS ASKED

Bids Asked January 30

N. Y., Long Island City—President Queens Boro, Queens Subway Bldg., 21-10 49 Ave., temporary force main, southeasterly direction in park land from end of existing sanitary sewer, in prolongation of Pell Ave., temporary automatic electric pump sta., 2nd ward, etc.

Bids Asked January 31

Mo., Columbia—R. Barrett, mayor, 4 sewage pump. stations. $40,000. W. M. Spann, 417 E. 13 St., Kansas City, Mo, engr.

Bids Asked February 1

N Y., Brooklyn—President Brooklyn Boro, Boro Hall, storm water and sanitary sewers, Brown and Batchelder Sts., between Avenues U and V and in Avenue V between Batchelder and E. 29 Sts.

N. Y., Shortsville—Village, Contr. "B", sewage treatment plant. $31,000. PWA. Total est. $160,000. W. S. Lozier, Inc., 10 Gibbs St., Rochester, engrs. CD 11/23—ENR 12/1.

Bids on or before February 1

Ind., Muncie—A. J. Glaser, P. O. Box 649, activated sludge type sewage treatment plant, G. B. Gascoigne & Assoc., 1140 Leader Bldg., Cleveland, O., consult. engrs.; adv. ENR 1/26. CD 8/24—ENR 9/1.

Bids Asked February 2

Wis., Milwaukee—Dpt. P. Wks., combined sewer, W. Keefe and North Teutonia Aves. $122,000. J. P. Schwada, city engr.

Bids Asked February 3

Calif., Carmel—Carmel Sanitary Dist., Sundial Court Apt. Bldg., sewerage works imprvs., vitr. pipe (trunk line outfall and interceptting sewers), constructing Scenic Rd., 16 Ave. sewage pump stations, suspension bridge, detritor, flocculator, clarifier, digestion tanks, etc.; sanitary sewers, manholes, pipe lampholes. Tentative date. C. C. Kennedy, 604 Mission St., San Francisco, engr. CD 1/10—ENR 1/12.

Bids Asked February 6

Minn., Minneapolis—Distructor and stack in connection with garbage disposal plant. Total est. $136,200. PWA. F. T. Paul, city engr. CD 12/2.

Bids Asked February 7

Ind., Fort Wayne—Bd. P. Wks., R. G. Beams, chn., City Hall, St. Mary's intercepting sewer, rein.-con., concrete, vitr. clay pipe. $375,000. Division of $5,000,000. PWA sewage treatment plant. C. W. Cole Eng. Co., 1030 W. Wayne St., consult engrs. CD 11/9—ENR 11/17.

Bids Asked February 7

Ind., Peru—Bd. P. Wks., H. E. Worl, clk., sewage treatment plant, $200,000; West Canal interceptor, $55,000. PWA. C. Cole, 1030 W. Wayne St., Fort Wayne, consult. engr.

Wis., Stevens Point — Sewage treatment plant, lift station, connecting sewers. Over $25,000. PWA. Consoer, Townsend & Quinlan, 211 W. Wacker Dr., Chicago, Ill., engr.

Bids Asked February 9

Ill., Chicago—J. J. Sullivan, clk. Sanitary Dist. of Chicago, 910 South Michigan Ave., Div. P, grit removal mechanisms, Calumet Sewage Treatment Works Exten. R. A. Woodhull, chn. Com. on Finance; adv. ENR 1/26.

N. Y., Buffalo—Buffalo Sewer Auth., D. H. McCarriagher, chn., City Hall, pump. sta. building, pump. equip., electrical work, special structures, sewers, part of intercepting sewer and sewage treatment project, Div. DD, Hamburg St. Pump. Sta., etc.; adv. ENR 1/26. CD 8/15—ENR 8/18.

Bids Asked February 14

Pa., Sharon—At office F. S. Williams, city clk., Contr. 2, addns., repairs to sewage disposal plant, general contract; Contr. 3, plumbing work; Contr. 4, electrical work; Contr. 5, heating work. Chester Engineers, 1050 Century Bldg., Pittsburgh, engrs.; adv. ENR 1/26. CD 7/20—ENR 7/28.

Bids Asked February 15

★**Mo., St. Joseph**—Rein.-con. storm sewers. $500,000. PWA. C. A. Haskens, Finance Bldg., Kansas City, Mo., engrs.

Bids Asked

N. Y., Schenectady—Electrical and plumbing work for Cowhorn Creek Pump. Sta. PWA. L. C. Purdy, city engr. CD 10/27—ENR 11/3, under C.A.

LOW BIDDERS

★**N. Y., New York**—Dpt. P. Wks., Municipal Bldg., Jan. 17, Contr. 2, sewer extens., Coney Island Sewage Treatment Works, Sec. 1, from Luang Constr. Co., E. 54 St. and Avenue U, Brooklyn, $66,865***Contr. 4, structures and equip. for partial treatment Bowery Bay Sewage Treatment Works, from Tulley & Di Napoli, 30-11 12 St., Long Island City, $1,384,569. CD 12/28—ENR 1/5.

CONTRACTS AWARDED

Ala., Decatur—R. N. Harris, mayor, furnace, flues, chimneys, etc., for refuse incinerating plant, to J. B. McBride & Son, Decatur, **$26,444.** Bids 12/15. CD 12/7

Calif., San Leandro—Sewage disposal plant, to G. Peterson, 1841 Bancroft Ave., **$151,000.** Award subject to **PWA** approval. Bids about 1/16. CD 1/9—ENR 12/8.

Conn., Bridgeport—Constructing Hope St. sewer, eliminating 52 in. Burr Creek outfall sewer, **WPA.** P. Brewster, dir. P. Wks. **$52,-048.**

Ill., Jerseyville—Sanitary sewerage sys., sewage disposal plant., 5.4 mi. various sized intercepting and lateral sewers. **WPA. $180,-000.** Bids 1/25, vitr. pipe, c.i., brick, cement, sand, gravel, reinforcing steel, etc. CD 7/1—ENR 7/7.

Ill., Winchester—Sewer distr. sys., sewage treatment plant, **WPA. $140,000.** Bids 12/7. CD 11/23—ENR 12/1.

Ind., Anderson—Grit remover for sewage disposal pump sta., to Dorr Co., 221 N. La Salle St., Chicago, Ill., **$4,115;** screening equip., to Chicago Pump Co., 2336 W. Wolfram St., Chicago, Ill., **$7,853.** Est. $13,000. H. Gwinnup, City Hall, engr.

Ind., Osgood—G. S. Row, pres., Town Bd., exten. sewerage sys., to Thompson Constr. Co., Versailles, **$24,400.** Bids 12/23. CD 12/14.

Ia., Allison—Town, sewage disposal plant, completing sewage sys., to H. Davey, Mason City, **$19,670.** O. W. Zack, engr. CD 11/25.

Kan., Lincoln Center — Sewage disposal plant, **WPA. $45,000.** Paulette & Wilson, Farmers Union Bldg., Salina, and 100 Kansas Ave., Topeka, engrs. CD 11/17—ENR 11/17.

†**La., Columbia**—U. S. Eng., P. O. Box 60, Vicksburg, Miss., storm drainage pumping plant, to Salley & Ellis, 511 Ouachita Nat. Bank Bldg., Monroe, **$17,251.** Bids 12/13. CD 11/28—ENR 12/1.

Mass., East Longmeadow—Contr. 1, sewage disposal plant, vitr. tile sewer, appurtenances, cyclone fencing, preliminary work, etc. **WPA. $50,000.** Tighe & Bond, 189 High St., Holyoke, engrs. CD 12/15—ENR 12/22.

Mass., Needham—Town, chn. Bd. Selectmen, R. C. Hall, Town Hall, Contr. 2, furnishing, erecting sewerage pump. equip., to Ralph P. Hall, Inc., 141 Milk St., Boston, **$6,324. PWA.** CD 12/9—ENR 12/15.

Mich., Detroit—M. J. O'Brien, chn. Wayne Co. Rd. Comn., interceptor sewer Ann Arbor Trail and Merriman Rd., Sect. 1-A, to Waterway Constr. Co., 3915 Bourke Ave., **$72,338. PWA.** Bids 11/14. CD 11/3.

Mich., Detroit—M. J. O'Brien, chn. Wayne Co. Rd. Comn., 3800 Barlum Tower, sewers and sewage disposal plant, Sect. 6, Parkway Interceptor, to C. Nelson Co., 117 Phillips Ave., Royal Oak, **$18,750.** Bids 12/27. CD 12/14.

Mich., Detroit—M. J. O'Brien, chn. Wayne Co. Rd. Comn., 3800 Barlum Tower, Parkway disposal plant, Merriman and Warren Rds., Nankin Twp., to R. E. Dailey, 507 CPA. Bldg., **$68,750. PWA.** Bids 12/12. CD 12/7.

Mich., Inkster — Outlet sewer for Inkster grade separation at Inkster Rd. and Michigan Central R.R., to C. Nelsen, 117 Phillips Pl., Royal Oak, **$12,025.** Bids 12/19. CD 12/6—ENR 12/8.

Mich., Midland—A. E. Coons, city clk., sewers, to McDermott & Sons, 402 Houseman Bldg., Grand Rapids, **$25,761.** Bids 12/6. CD 11/23—ENR 12/1.

Mich., Watervliet—C. E. Shepherd, city clk., sewage treatment plant, to Pearson Constr. Co. Benton Harbor, **$16,432.** Bids 12/17, awarded 12/27. CD 12/20—ENR 12/22.

Mich., Wyandotte — M. J. O'Brien, chn. Wayne Co. Rd. Comn., Detroit, disposal plant, to Nichols Eng. & Research Co., 60 Wall Tower, New York City, **$92,375.** Bids 11/28. CD 11/15—ENR 11/17.

Mo., North Kansas City—Concrete storm sewers, mains, laterals. **WPA. $130,000.**

Mo., University City (St. Louis P.O.)—Sanitary sewers, Sewer Dist. 75, to Samuel Kraus Co., 649 Edmund St., St. Louis, **$17,036** on Proposal B. Est. **$27,500. PWA.** Bids 1/11. CD 1/3—ENR 1/5.

N. Y., Amherst—Laying sanitary sewers in Washington Hy., Getzville Rd., Wehrle Dr., Longmeadow and Hedstrom Rds., **WPA. $88,773.**

N. Y., Buffalo—Buffalo Sewer Auth., City Hall, additional sewer, Main St. from Scajaquada Creek to Jefferson Ave to Humboldt Parkway, **WPA. $80,547.**

N. Y., Buffalo—State Dpt. Mental Hygiene, State House, Albany, storm sewers, separate storm and sanitary sewers, laying new laterals, etc., at Buffalo State Hospital. **WPA. $313,864.**

N, Y., Buffalo — Buffalo Sewer Authority, City Hall, laying 2,169 ft. storm drain, Barnes St. from Bird to Lafayette Aves., **WPA. $65,469.**

N. Y., Buffalo—Buffalo Sewer Auth., laying storm sewers, Delaware Ave., Nottingham Terrace, Middlesex and Meadow Rds. **WPA. $247,440.**

N. Y., Freeport—Installing sanitary sewers, laterals, manholes, etc., various streets. **WPA. $25,000** plus.

N. Y., Fulton—Laying sanitary sewerage sys. and 104 service connections in Van Buren, N. 7, W. 4, E. Bway., 8 and Academy Sts., **WPA. $24,317.**

N. Y., Hornell and **Utica**—Cities, storm and sanitary sewers, various streets, Hornell, and storm culvert at Ballon Creek, Utica, **WPA. $25,000** plus.

★**N. Y., Lackawanna**—Intercepting storm drains, to relieve sanitary sewers, **WPA. $551,925.**

N. Y., Middletown and **Rockville Center**—Villages, reconstructing sanitary sewers with manholes, Cherry St., Middletown, storm sewer, in Rockville Center, **WPA.** Over **$25,-000.**

N. Y., Oneida—Storm sewers, incl. mains, laterals, catch basins, **WPA. $25,000.**

N. Y., Oswego—Dpt. P. Wks., additional sewers, W. Schuyler St., **WPA. $35,000.**

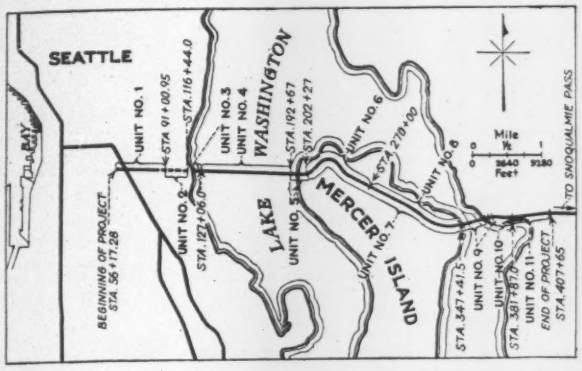
N. Y., Piermont — Storm sewers, culverts, incl. catch basins, etc., **WPA. $25,000** plus.

N. Y., Saratoga Springs and **Fulton**—Additional 0.3 mi. storm sewers, catch basins in Saratoga Springs, sanitary sewer, manholes, cofferdam, etc., in Fulton, **WPA.** Over **$25,000.**

N. Y., Tonawanda—Storm relief drain, paving afterwards, Hampton Parkway, **WPA. $25,000.**

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work



PONTOON BRIDGE, SEATTLE

OWNER: Washington toll bridge authority, highway building, Olympia; L. V. Murrow, chief engineer.

PROJECT: Construction of Lake Washington pontoon bridge, consisting of eleven units over a total length of 6½ miles. Units are described as follows: Unit No. 1, Seattle approach; from Rainier Ave. to west tunnel portal, 3,070 ft.; unit No. 2, tunnel, 1,445 ft. long, consisting of twin bores 30 ft. wide and 23 ft. maximum height; unit No. 3, west approach to pontoon bridge consisting of three 81-ft. continuous concrete spans, three 150-ft. continuous steel deck spans; one 215-ft. steel through arch span and one 150-ft. steel deck span, totaling 1,062 ft.; unit No. 4, pontoon bridge, 6,560 ft. long (typical pontoons are four cells wide giving a total width of 59 ft.).; unit No. 5, east approach to pontoon bridge, consisting of a 150-ft. steel deck span, one 215-ft. steel through arch span, two 150-ft. steel deck spans and four 73-ft. concrete spans, totaling 960 ft.; unit No. 6, western side of Mercer Island, grading and paving, 6,773 ft.; unit No. 7, bridges or structures on Mercer Island, reinforced concrete grade separations; unit No. 8, eastern side of Mercer Island, grading and paving, 7,741 ft.; unit No. 9, east channel bridge, consisting of two 60-ft. concrete spans, two 180-ft. steel deck spans, one 215-ft. steel through arch span, three 180-ft. steel deck spans and two 60-ft. concrete spans, totaling 1,355 ft.; unit No. 10, grading and paving on east side of Lake Washington, 2,000 ft.; unit No. 11, concrete spans of 10 ft., 30 ft., 49 ft., 68 ft., 49 ft., 30 ft., seventeen units at 30 ft., 47 ft., 64 ft., 80 ft., 64 ft. and 47 ft., totaling 2,578 ft. The roadway on all bridges is 45 ft., with two 4-ft. sidewalks. Each of the twin-bore tunnels is to have a 24-ft. roadway and a 6-ft. sidewalk. The pavement of units 1, 6, 8 and 10 consists of two 20-ft. concrete strips with a 4-ft. separation mall. Stipulated contract times are given with the bid tabulation for the individual contracts. Transportation by rail, highway and water is available. As this job is located in the heart of Seattle, low costs prevail throughout the project. *Note: Due to space limitations, the first five schedules only are published this week. The remaining six will be presented with brief summaries of pertinent data above in two ensuing weeks.*

BIDS: Bids were first opened Nov. 29, 1938, on all units, the total of which was considerably above the estimate, and above the amount of money available. Accordingly, the Authority re-advertised for bids on units 3, 4, 5, and 9, and these bids were received and opened Dec. 20, 1938. It was also found that by elimination of certain items in the construction of the other seven units and by changes and revisions, that an appreciable saving could be made. An agreement was reached with the low bidders on these units, and after bids were opened for the four units on Dec. 20, the grand total for all eleven units was satisfactory. Contracts were signed for all eleven units on Dec. 30 and contractor started work immediately. Final contract total is $7,312,059. Adjustments made on contracts 1, 2, 6, 7, 8, 10 and 11 are as follows: unit 1, elimination of Rainier Ave. over-crossing; unit 2, revision of tunnel section; unit 6, changes in paving due to elimination of structures in unit 7; unit 7, elimination of three over-crossings and one under-crossing which originally separated the main highway from local road; unit 8, changes in paving due to elimination of structures in unit 7, and elimination of the guard rail; unit 10, changing alignment and grade line, eliminating reconstruction of north side roads, eliminating over-crossing at Station 363+00 and elimination of all guard rail; unit 11, reduction from six lane to four lane roadway and elimination of side road connections. Low bidders on each contract, contract time, and the adjusted award prices are given at the head of each tabulation of unit prices.

UNIT NO. 1

Contract time 360 calendar days; total high bid of five, $406,886.

LOW BIDDERS:

1. Northwest Const. Co. Inc., Seattle (contract).... *$357,009
2. Acme Const. Co. & Macri Bros., Seattle..... 358,760
3. C. L. Creelman, Seattle 375,718

* Adjusted to $176,129.

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Struct. excav.	2,980 c. y.	3.00	2.00	3.50
2. Conc. Cl. "A"	4,020 c. y.	27.00	26.25	28.00
3. Conc. Cl. "B"	874 c. y.	26.00	25.00	21.00
4. Reinf.	1,284,000 lb.	.05	.045	.045
5. Cast steel drains	18 ea.	25.00	24.00	25.00
6. Reflector units	10 ea.	10.00	10.00	8.00
7. Reinf. conc. bridge railing	2,626 l. f.	4.00	4.00	3.00
8. 32" Galv. steel pipe	480 l. f.	1.25	1.20	2.00
9. Struct. steel	8,000 lb.	.10	.10	.10
10. Lighting system	L. S.	11,000.00	10,428.00	12,000.00
11. Remove exist. conc. pav't driveways	7,565 s. y.	.25	.20	.40
12. Remove exist. conc. sidewalks	3,300 s. y.	.15	.20	.25
13. Remove exist. conc. curbs	4,780 l. f.	.10	.10	.20
14. Remove exist. asph. pav	590 s. y.	.25	.20	.30
15. Uncl. excav. incl. haul	143,615 c. y.	.24	.30	.30
16. Struct. excav. incl. haul	745 c. y.	1.25	1.75	1.50
17. Selected roadway borrow incl. haul	3,380 c. y.	1.00	.90	1.25
18. Conc. pav't. 11 in. x 8 in. x 11 in. std. 14-day mix	19,450 s. y.	1.95	2.20	2.20
19. Conc. pav't. 9 in. x 6½ in. x 9 in. std. 14-day mix	11,280 s. y.	1.70	1.90	1.95
20. Conc. driveways 5 in. std. 14-day mix	136 s. y.	1.60	1.60	2.00
21. Conc. sidewalk 4 in. std. 14-day mix	5,145 s. y.	1.40	1.35	1.40
22. Integral conc. curb ht. 6 in.	6,540 l. f.	.20	.25	.35
23. Integral conc. curb ht. 8 in.	4,235 l. f.	.30	.50	.45
24. Integral conc. curb ht. 14 in.	160 l. f.	1.00	1.00	.80
25. Integral conc. curb variable 6 in. to 14 in.	480 l. f.	.75	1.00	.60
26. Conc. pav't. bridge appr. slabs std. 14-day mix	185 c. y.	12.00	12.00	2.50
27. Pav't reinf. type No. 2	22,050 lb.	.05	.05	.05
28. Dowel bars with rubber caps	6,630 ea.	.22	.22	.20
29. Dowel bars without caps	15,680 ea.	.13	.14	.12
30. 4 in. integral traffic stripe	6,525 l. f.	.25	.20	.15
31. 6 in. Plain conc. or V.C. sewer pipe	1,900 l. f.	.35	.45	.40
32. 8 in. Plain conc. or V.C. sewer pipe	520 l. f.	.45	.60	.65
33. 6 in. Plain conc. or V.C. drain.	2,750 l. f.	.25	.60	.65
34. Gravel backfill	90 c. y.	3.00	3.50	3.00
35. Remove, reset exist. C.I. inlets.	19 ea.	10.00	25.00	15.00
36. Rem. & reset exist. C.I. manhole catch basin & valve chamber.	16 ea.	10.00	17.00	55.00
37. Rem. & reset exist. C.I. monument cases	5 ea.	10.00	5.00	10.00
38. Cast iron monument cases	7 ea.	12.00	5.00	12.00
39. Cast iron inlets	26 ea.	20.00	30.00	25.00
40. Rebuild exist. catch basins	5 v. f.	12.00	20.00	5.00
41. Backfilling exist. catch basins	12 c. y.	1.00	1.00	1.00
42. Catch basins	7 ea.	60.00	60.00	90.00
43. Catch basins using exist. frames & covers	6 ea.	50.00	45.00	75.00

(*Contract Unit Prices continued on second following page*)

Sewers, etc. (Continued)

N. Y., Utica and Whitesboro—City of Utica and Village of Whitesboro, additional storm sewers. **WPA.**

N. C., Raleigh—Bd. Dirs. State School for the Blind & Deaf, Contr. 3, plumbing for sewage treatment plant, to Trull Plumbing & Heating Co., 411½ Fayetteville St., Raleigh, **$923*****Contr. 4, well, to Sydnor Pump & Well Co., 1310 E. Main St., Richmond, Va., **$1,324*****Contr. 5, pump equip., to J. R. Connally, Varnville, S. C., **$880.** Grand total $3,127. **PWA.** Bids 12/28. CD 12/16—ENR 12/22.

O., Bellefontaine—Sewage disposal plant, to Bellefontaine Development Co., Bellefontaine, **$171,246.** Est. $185,000. **PWA.** Bids 12/19. CD 12/16.

Okla., Atoka—Sewage disposal plant, **WPA. $24,149.** Alexander & Pollard, Terminal Bldg., Oklahoma City, engrs.

Okla., Bethany — Sanitary sewer exten., **WPA. $25,000.** R. S. James, Cotton Exch., Oklahoma City, engr.

Okla., Oklahoma City — Cleaning storm sewers in business section, **WPA. $47,000.** J. S. Waldrep, City Hall, engr.

Pa., Camp Hill—Boro, W. A. Sellers, secy., sanitary sewers, district underground station, to DiMarco & Ciccone, 151 E. Post Rd., White Plains, N. Y., **$216,094.** Est. $248,250. Bids 12/8, awarded 12/12. **PWA.** CD 11/30—ENR 11/17.

Pa., Pittsburgh—F. M. Roessing, dir. P. Wks., Contr. 2, sewer in Broadhead-Fording Rd., to Holmes Constr. Co., 623 Grant Bldg., **$54,476.** Bids 12/24. CD 12/20.

Tex., Dallas—208.6 ft. concrete storm sewers under Clarendon Dr. at Cedar Creek, "Purchase and Hire" plan. **$27,687. WPA.** A. P. Rollins, city engr.

Tex., Dallas—A. P. Rollin, engr., City Hall, storm sewer 2,173 ft. in Mill Creek from Munger to Capitol Ave., "Purchase and Hire" plan, **WPA. $40,389.**

Tex., Longview—B. Taylor, 13,819 ft. concrete storm sewers throughout city, "Purchase and Hire" plan. **WPA. $51,453.**

Tex., Luling—Sanitary sewer lines throughout city, "Purchase and Hire" plan. **$29,769.**

Tex., San Antonio—C. K. Quin, mayor, sanitary sewer lines, "Purchase and Hire' plan. **WPA. $100,210.** I. Ewig, City Hall, engr.

Wash., Olympia—C. H. Williams, city Hall, 18.28 mi. sewers, manholes, catchbasins and inlets for storm drainage in 5, 8 and 4 Aves., Legion Way, Conger St., et al., into northwest Olympia. **WPA. $283,000.** CD 12/8—ENR 12/15.

Wash., Orting — Sewage treatment plant, pump well, sludge drying beds, manholes, etc. **WPA. $104,131.** Some materials already purchased.

Wis., Bonduel — Village, sewage disposal plant, to Kasper Constr. Co., Manitowoc, **$31,-866**; sewers, to Abel & Lotz, Wausau, **$21,130. PWA.** Bids 1/12. CD 1/5.

Wis., Manitowoc—North Shore interceptor sewer and appurtenant work, Contr. 2, to United Constr. Co., 301 Architect Bldg., Green Bay, **$45,441. PWA.** Bids 1/13. CD 1/5.

Wis., Nekoosa—Sewage plant, to Kroening Eng. Co., 4500 W. Mitchell St., Milwaukee, **$35,695**; sewers, to Barnett & Record Co., 700 Flour Exch., Minneapolis, Minn., **$19,309. PWA.** Bids 1/17. CD 1/5—ENR 1/12.

Sask., Moose Jaw—D. Craven, city clk., general contract sewage disposal plant addn., to P. W. Graham & Son, Ltd., Wellard Bldg.; equip., to Dorr Co., Inc., 330 Bay St., Toronto, Ont. Bids 12/10. CD 12/1.

BRIDGES, GRADE CROSSINGS

PROPOSED WORK

Illinois—State Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield, overcrossing over tracks Chicago Northwestern R. R., 3 mi. south of Nelson, Lee Co. E. Lieberman, Centennial Bldg., Springfield, engr.

Illinois—State Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield, subway under tracks A.T.&S.F. R.R., Route 118A, Livingston Co. E. Lieberman, Centennial Bldg., Springfield, engr.

Minn., Owatonna—P. C. Hosfield, city engr., bridge over Straight River, North St. $30,000.

Missouri—State Hy. Comn., Jefferson City, plans 299 ft. bridge over Little Sac River, Walnut Grove-Route Rd., Route SB Project FAS 850 C1, Greene Co. Over $25,000. C. W. Brown, Jefferson City, hy. engr.

Nebraska and **Iowa**—Ak-Sar-Ben, 106 City Hall, repairing, modernizing Douglas St. bridge, new surface or floor, ironwork and painting. **$200,000. Maturity in spring.**

N. J., Elizabeth—Union Co., Courthouse, 4 concrete, steel bridges, Stuyvesant Ave., Union, Canoe Brook Parkway, Summit, 6th Ave., Roselle and Vaux Hall Rd., Union. $35,000. R. C. Collins, Courthouse, engr.

New York—Dpt. P. Wks., Municipal Bldg., New York, concrete piers for new Meeker Ave. bridge over Newtown Creek, Brooklyn and Queens Boros. $150,000. CD 12/9—ENR 12/15, under CA.

N. Y., Groveland Station—Delaware, Lackawanna & Western R.R. Co., G. A. Phillips, ch. engr., Hoboken, N. J., bids in spring (invited list bidders), grade crossing elimination. Over $25,000.

N. Y., Watkins Glen—State Dpt. P. Wks., State Bldg., Albany, reconstructing present 2 span Glen Creek bridge, S. Franklin St. $25,000 plus. T. F. Farrell, State Bldg., Albany, engr.

O., Cleveland—Bd. Comrs. Cuyahoga Co., G. H. Stahler, clk., steel bridge superstructure over Snake Hill on Fairmount Blvd., $90,000; 2 rein.-con. bridges over Bulkley Blvd., $100,-000 each. J. O. McWilliams, Standard Bldg., co. engr.

†**Washington**—Public Roads, Wash., D. C., bids in late spring or early summer bridge White Salmon River. $35,000.

Alta., Edmonton—Steel, concrete pedestrian bridge. $25,000. A. W. Haddow, City Hall, engr.

BIDS ASKED

Bids Asked January 30

★**R. I., Providence**—Bd. Contr. & Supply, J. F. Collins, chn., City Hall, steel viaduct, Point and Eddy Sts., and approaches. $600,-000. PWA. CD 10/28—ENR 11/3.

Bids Asked January 31

North Carolina — State Hy. & P. Wks. Comn., Raleigh, structures, 2 bridges, Project 9698 Madison Co., $25,000-$50,000; structures, Project 8252, Cleveland Co., $25,000-$50,000; overhead bridge, approaches over Southern R.R. at W. 1 St., in Winston-Salem, Project 7411, Forsyth Co., $25,000-$50,000. W. V. Baise, Raleigh, engr.

Bids Asked February 7

†**Minn., Fort Snelling** — Con. Q.M., Fort Snelling, reinforcing with structural steel, Fort Snelling Bridge over Mississippi River to St. Paul, and reconstructing sidewalks, guard rails, etc. $25,000.

Bids Asked February 8

California—C. H. Purcell, engr. State Hy. Dpt., P. Wks. Bldg., Sacramento, steel beam overhead structure, with concrete deck, etc., over Southern Pacific R.R. tracks, 0.4 mi. south of Turlock and 0.3 mi. grading, concrete and asphaltic concrete paving, Stanislaus Co. Former contract rescinded. CD 12/19—ENR 12/22, under C.A.; rein.-con. slab and girder bridge over Ohman Creek, 9 mi. north of Garberville, also grading, roadmix surfacing, Class "C" seal coat surfacing, 0.2 mi. Humboldt Co.

Bids Asked February 9

California—C. H. Purcell, engr. State Hy. Dpt., State Bldg., Los Angeles, reconstructing treated timber bridge over Cuyama River, near Ozena, Ventura Co.; 2 rein.-con. slab bridges, 1 near Etiwanda Ave., 7 mi. east of Ontario and other at East Ave., 8 mi. east of Upland, and grading, concrete and asphaltic concrete paving 0.04 mi. approaches, San Bernardino Co.

Bids Asked February 14

★**Maryland** and **Virginia**—State Roads Comn., Federal Reserve Bank Bldg., Baltimore, Md., Contr. 2, west abutment, approach trestle bents, Nos. 1 to 59 (inclusive), piers Nos. 1 to 20 (inclusive), Potomac River Bridge, between Ludlow Ferry, Md., and point near Dahlgren, Va. PWA. $2,120,000. L. H. Steuart, Baltimore, Md., secy.; adv. ENR 1/26.

Bids Asked about February 20

★**N. Y., Dunkirk**—Pennsylvania R.R. Co., F. D. Davis, supt. Buffalo Div., Buffalo, W. W. Wiggins, ch. engr., Broad St. Sta., Phila., Pa., and New York, Chicago & St. Louis R.R., A. C. Harvey, ch. engr., Terminal Tower, Cleveland, O., elimination of grade crossings over above railroads. $722,-810.

Bids Asked March 14

N. Y., White Plains—Westchester Co. Park Comn., County Office Bldg., Contr. 417, 1,275 ft. viaduct, approaches and trestle section, Mt. Vernon and Yonkers, $165,000; Contr. 418, 4 span 232 ft., 2 track plate girder bridge, rein.-con. abutments and piers, Dunwoodie, city of Yonkers, to carry Putnam Div., N. Y. C. R.R. over Cross County Parkway, $135,000. C. A. Garfield, engr. in charge of construction; adv. ENR 1/26.

CONTRACTS AWARDED

Alabama—State Hy. Comn., Montgomery, steel, concrete bridges 0.088 mi. Marion Co., to W. L. Cobb, Decatur, Ga., **$54,889*****grading, draining, graveling 1.615 mi. DeKalb Co., to C. G. Kershaw Contg. Co., Martin Bldg., Birmingham, **$32,833*****bridges on same road, to W. F. Scott Co., Thomasville, Ga., **$21,942.** Grand total $109,664. Bids 12/16. CD 12/12.

Alabama—State Hy. Comn., Montgomery, steel, concrete bridges 0.149 mi. Coosa Co., to Goodwyn & Murphree, Troy, **$60,998**; single surfacing treating 4.958 mi. Barbour Co., to Smith Eng. & Constr. Co., Pensacola, Fla., **$6,900.** Bids 12/16 and 12/30. CD 12/12.

Alabama—State Hy. Comn., Montgomery, steel, concrete bridge on 0.13 mi. Jasper-Birmingham Rd., Walker Co., to Southern Constr. Co., 615 S. 11 St., Birmingham, **$118,-380.** Bids 1/13.

California—C. H. Purcell, engr. State Hy. Dpt., State Bldg., Los Angeles, rein.-con. slab bridge over San Antonio Wash, grading, asphaltic concrete paving 0.2 mi. San Bernardino Co., to G. E. Kerns, 3712 Gaviota Ave., Long Beach, **$44,965.** Bids 1/5. CD 12/18—ENR 12/22.

Calif., Baker—C. H. Purcell, engr. State Hy. Dpt., 808 State Bldg., Los Angeles, bridge over Mojave River, San Bernardino Co., to R. M. Price, 5400 Imperial Hy., Southgate, **$35,925.** Bids 12/29. CD 12/12—ENR 12/15.

Delaware—State Hy. Dpt., Dover, W. W. Mack, ch. engr., C. W. Cullen, chn., Ashland Bridge, roadway, Contr. 664, New Castle Co., to Olivere Paving & Constr. Co., 100 W. 7 St., Wilmington, **$28,507.** PWA. Bids 12/21. CD 11/29—ENR 12/1.

Illinois—State Dpt. P. Wks. & Bldgs., Div. Hys., Springfield, I-beam bridge, Hancock Co., to Cameron Joyce & Co., 19 S. 7th St., Keokuk, Ia., **$37,608.** Bids 11/18. CD 11/10.

Ill., Mound City and **Vienna**—Pulaski and Johnson Counties, 2 span 31 ft. each, one span 40 ft. steel I-beam bridge, treated pile bents, Sect. 14B-MFT, to F. Gandy, Ullin, **$6,704.** Bids 12/22. CD 12/14.

Ill., Springfield—Sangamon Co., Court House, 58x23 ft. steel beam bridges, Sect. 38B-15D, Sangamon Co., to Sangamon Constr. Co., Illinois Bldg., **$13,782.** Bids 12/7. CD 12/1.

Ind., South Bend—Angela Ave. Bridge, to Hay-Weaver Co., South Bend, **$78,632.**

Iowa—State Hy. Comn., Ames, 34 concrete box culverts, to Hughes & Easton, 310 Park Ave., Council Bluffs, **$39,058*****24x150 ft. continuous I-beam bridge, to P. B. Reis, 932 35th St., Des Moines, **$15,804*****23x16 ft. wood bridge, to Perry Jayne, 2201 Mt. Vernon Ave., Cedar Rapids, **$1,605.** Grand total $56,467. Bids 1/17. CD 1/9—ENR 1/12.

Ia., Cherokee—Cherokee Co., 2 bridges and removal 1 bridge, to Graves Bros. Constr. Co., Melvin, **$22,829.** Bids 1/16. CD 1/9.

Ia., Davenport—Scott Co., R. C. Loufek, aud., 2 I-beam bridges, to J. H. Hunzinger & Co., Security Bldg., Davenport, **$13,418. PWA.** Bids 1/10, awarded 1/10. CD 12/29—ENR 1/5.

Mich., Benton Harbor—J. F. Null, city clk., bridge over Paw Paw River, to J. Yerrington & Getman Bros., South Haven, **$62,021. PWA.** Bids 11/21, awarded 11/25. CD 11/9.

Mich., Ecorse—M. J. O'Brien, chn. Wayne Co. Rd. Comn., 3800 Barium Tower, Detroit, 2 span, 47 ft. concrete, steel bridge, incl. grading, draining and grade separation, Outer Dr. and Michigan Central R.R., to W. I. Storen Co., 2411 14 St., Detroit. **$305,400. PWA.** Bids 12/15. CD 12/2—ENR 12/8.

Miss., Vicksburg—Warren Co., J. Sherard, clk., steel, concrete bridge, approaches 0.476 mi. Marble Flat Rd. over Clear Creek; 0.968 mi. Rifle Range-Porter Chapel Rd. over Hatchers Bayou and Stouts Creek, to Newsom Bros., Laurel, and J. W. Snowden, Columbia, **$20,093** and **$36,952** respectively.

New Jersey—E. D. Sterner, comr. State Hy. Dpt., Trenton, 2 underpasses Main Ave. and Erie R.R. Route 6, Sect. 8A, Passaic Co., to Union Bldg. & Constr. Co., 631 Main Ave., Passaic, **$89,108.** Bids 1/11. CD 12/27—ENR 12/29.

★**N. J., Absecon** — Pennsylvania Reading Seashore Lines, W. D. Wiggins, ch. engr., 1658 Broad St., Phila., Pa., and State, Bd. P. Utility Comn., 1060 Broad St., Newark, 5 steel, concrete railroad bridges, embankments and pedestrian subway for grade crossing elimination, to A. Miller, 3333 Arctic Ave., Atlantic City, **$643,731**; track work, signal sys., electrification, etc., to Pennsylvania Reading Seashore Lines, 1658 Broad St., Phila., Pa. (force account) **$211,700.** CD 1/18—ENR 1/19.

N. J., Elizabeth — Bd. Freeholders Union Co., redecking South 1st St. bridges, to Simpson & Brown, 90 West St., New York. **$7,164.** Bids 12/19. CD 12/15—ENR 12/22.

New York—Dpt. Parks, R. Moses, comr., Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Contr. M.C. 38-3, Cross Island Parkway, grade separations, 14 Ave., 149 St. and Whitestone intersection, on Cross Island section new belt parkway, Queens Co., to Nicholas DiMenna & Sons, Inc., 1525 Blondell Ave., New York, **$330,651.** Bids 1/3. CD 1/3—ENR 1/5.

New York—See "Roads."

N. Y., Lockport—Niagara Co., steel, concrete hy. bridges to replace present structures, various parts of county. Funds appropriated. **$100,000.** Owner builds. R. Rumsey, c/o owners, co. engr. CD 11/15—ENR 11/17.

N. Y., Long Island City—President Queens Boro, Queens Subway Bldg., 211 49 Ave., bridge, Horace Harding Blvd. and Rodman St., to Elmhurst Contg. Co., 53-04 97 Pl., Elmhurst, **$178,254.** Bids 1/6. CD 12/28, under "Roads."

O., East Cleveland—C. A. Carren, city mgr., 360 ft. rein.-con. bridge 50 ft. wide over Terrace Rd., **WPA. $250,000.** W. Watson & Assoc., 4614 Prospect Ave., Cleveland, archts. and engrs.

Okla., Guthrie—State Hy. Dpt., Oklahoma City, bridge over Mineral Creek, Logan Co. $130,000. V. T. Moon, Capitol, Oklahoma City, engr.

(Contract Unit Prices continued from page 13)

44. Catch basins with spec. inlet tops	5 ea.	75.00	72.00	100.00
45. Finishing roadway	57 sta.	15.00	10.00	10.00
46. Slope treatment	3,970 l. f.	.10	.10	.10
47. Extra for use of high early strength cement	720 bbls.	.65	.50	.75
48. Conc. post fence	168 l. f.	3.00	1.00	2.00
49. Bull's eye reflectors 4-in.	8 ea.	10.00	5.00	8.00
50. Bit. road approaches	95 tons	10.00	6.60	8.00
51. Clear. grub	L. S.	4,000.00	2,500.00	9,000.00

UNIT NO. 2

Contract time 480 days; only bidder was Bates and Rogers Const. Co., Chicago; original bid of $1,422,737, was adjusted to $1,372,320.

Item	Quan.	Unit Price
1. Conc. cl. "B"	305 c. y.	$ 31.20
2. Reinf.	14,000 lb.	.044
3. Reinf. conc. bridge railing	740 l. f.	4.50
4. Top soil	7,000 c. y.	2.65
5. Excav. incl. all haul	47,900 c. y.	.40
6. Excav. cl. "D" (in ditch)	200 c. y.	1.15
7. Struct. excav. (drainage)	1,660 c. y.	1.45
8. Selected roadway borrow	6,775 c. y.	1.05
9. Slope treatment	700 l. f.	.55
10. Finishing roadway	29 sta.	12.00
11. Conc. pavt. std. 14 day mix	15,520 s. y.	2.40
12. Alley crossing	224 s. y.	1.85
13. Conc. sidewalk	2,476 s. y.	1.60
14. Conc. curb & gutter	960 l. f.	1.60
15. Integ. conc. curb	5,019 l. f.	.21
16. Spl. conc. curb 16 in.	1,330 l. f.	1.05
17. Dowel bars with rubber caps	2,730 ea.	.26
18. Dowel bars without caps	8,490 ea.	.19
19. Pavt. reinf. type No. 2	93,000 lb.	.065
20. Pavt. header No. 3	370 l. f.	1.05
21. Cable guard rail des. No. 6	300 l. f.	1.55
22. Catch basin	4 ea.	165.00
23. Inlet	17 ea.	55.00
24. Block manholes	4 ea.	135.00
25. Adjust. existing manholes to grade	2 ea.	20.00
26. Remov. exist. sidewalk, curb & conc. pavt.	2,045 s. y.	.33
27. Conc. sewer pipe 8 in.	1,000 l. f.	.58
28. Drain pipe 8 in.	260 l. f.	.58
29. Conc. sewer pipe 12 in.	400 l. f.	1.00
30. Std. culv. pipe 18 in.	900 l. f.	2.00
31. Std. reinf. conc. culv. pipe 24 in.	400 l. f.	3.30
32. Reflector button lane markers	120 ea.	2.20
33. 2-in. double run pipe hand railing complete.	900 l. f.	2.75
BITUMINOUS SURF. TREATMENT PLANT MIX TYPE—CLASS "F"		
34. Prep. of untr. surf	6,770 s. y.	0.55
35. Bit. cem. M. C. 2 prime coat	8 tons	25.00
36. Bit. cem. R. C.-4-non skid seal	10 tons	26.00
37. Bit. mix. — plant mix	915 tons	7.35
38. Min. aggr., non skid seal	80 c. y.	3.15
TUNNEL		
39. Struct. excav.-class "A" (tunnel)	107,800 c. y.	7.12
40. Struct. excav.-class "B" (vent shafts)	2,500 c. y.	8.90
41. Struct. excav.-class "C" (portal footings).	1,000 c. y.	1.15
42. Conc. cl. "B" (tunnel)	18,400 c. y.	13.90
43. Conc. cl. "B" (vent shafts)	750 c. y.	25.10
44. Conc. cl. "B" (portal)	2,050 c. y.	15.40
45. Conc. cl. "B" (invert)	5,850 c. y.	11.50
46. Steel reinf. bars (tunnel, portals & vent shafts)	1,477,000 lb.	.042
47. Lighting syst.	L. S.	13,860.00
48. Conc. pavt. 11 in. x 8 in. x 11 in. std. 14 day mix (tunnel)	3,800 s. y.	2.40
49. Dowel bars with rubber caps	315	.26
50. Dowel bars without caps	1,048	.19
51. Integ. conc. curb 15-in. (tunnel)	2,850 l. f.	1.05
52. Conc. sidewalk (tunnel)	1,300 s. y.	1.60
53. Spl. invert backfill	18,000 c. y.	1.05
54. Spl. portal backfill	8,930 c. y.	1.05
55. Precast conc. (portals)	L. S.	5,625.00

UNIT NO. 3

Contract time 365 days; high bid of four, $493,465.

LOW BIDDERS:

1. Puget Const. Co., Clarkston* — $447,224
2. Gen. Const. Co. & Columbia Const. Co., Seattle (contract) — 460,470
3. Puget Sound Br. & Dredging Co. & Parker-Schram Co., Seattle — 479,187

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Struct. excav. cl. "B"	795 c. y.	12.00	20.00	27.00
2. Struct. excav. cl. "C"	725 c. y.	10.00	18.00	19.00
3. Struct. excav. cl. "D"	480 c. y.	7.00	14.00	13.00
4. Struct. excav. cl. "E"	2,700 c. y.	3.00	3.00	4.00
5. Conc. cl. "A" on steel spans	650 c. y.	20.00	28.00	31.00
6. Conc. cl. "A" in conc. struct	1,000 c. y.	24.00	26.00	25.00
7. Conc. cl. "B"	2,670 c. y.	22.00	22.00	22.00
8. Conc. cl. "D"	2,640 c. y.	16.00	14.00	14.00
9. Reinf.	890,600 lb.	.05	.05	.045
10. Struct. steel	2,470,000 lb.	.084	.08	.085
11. Cast steel	35,000 lb.	.20	.18	.20
12. Cast bronze	3,400 lb.	1.00	.60	1.00
13. Cast steel drains	28 ea.	25.00	25.00	30.00
14. 32 in. galv. steel pipe	280 l. f.	1.50	2.00	1.00
15. 6 in. plain conc. or V.C. sewer pipe.	600 l. f.	.60	.75	.60
16. Reinf. conc. bridge rail	2,124 l. f.	3.00	4.50	4.00
17. Elect. conduit	L. S.	2,000.00	1,000.00	1,522.00
18. Reflector units	2 ea.	5.00	10.00	10.00
19. Steel mesh roadway deck	106,400 lb.	.08	.13	.13

* received two other contracts.

UNIT NO. 4 (Pontoon Bridge)

Contract time, 530 days; 3 bidders.

LOW BIDDERS:

1. J. H. Pomeroy & Co. Inc., Puget Sound Bridge & Dredging Co., Parker-Schram Co., Seattle — $3,253,597
2. General Const. Co. & Columbia Const. Co., Seattle — 3,493,015
3. Bates and Rogers Const. Corp., Chicago — 3,602,175

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Reinf.	15,180,000 lb.	.045	.054	.052
2. Struct. steel	1,724,900 lb.	.09	.10	.13
3. Cast steel	553,000 lb.	.21	.20	.225
4. Cast steel drains	264 ea.	35.00	25.00	30.40
5. Reflector button land markers.	150 ea.	5.00	2.00	2.75
6. Conc. cl. "B" in anchors	1,324 c. y.	28.50	30.00	35.60
7. Conc. cl. "D" in anchors	500 c. y.	30.00	30.00	35.60
8. Reinf. in anchors	176,240 lb.	.05	.05	.049
9. Struct. steel in anchors	874,260 lb.	.15	.12	.145
10. Placing anchors Type "A"	46 ea.	1,350.00	500.00	1,670.00
11. Placing anchors Type "B"	4 ea.	1,600.00	500.00	1,860.00
12. Placing anchors Type "C"	14 ea.	2,000.00	900.00	1,550.00
13. Anchor cables	26,000 l. f.	5.15	3.00	7.05
14. Operating cables	2,200 l. f.	2.00	1.50	1.40
15. Conc. spl. cl. "A"	43,475 c. y.	32.50	38.00	34.50
16. Bronze	2,540 lb.	1.00	.60	.77
17. Machinery	125,000 lb.	.35	.30	.33
18. Mechanical & hydraulic equip.	L. S.	30,000.00	24,800.00	24,000.00
19. Elect. equip.	L. S.	90,000.00	93,000.00	82,500.00
20. Yielding barriers	L. S.	18,000.00	18,000.00	16,900.00
21. Gravel ballast	1,000 c. y.	3.00	2.00	4.35
22. Reflector button signals	2	15.00	50.00	7.00
23. Flexible metal guard rail	440 l. f.	2.00	1.50	2.60
24. Reinf. conc. bridge railing-type "A" & "B"	12,000 l. f.	3.50	4.00	5.10
25. Reinf. conc. bridge railing-type "C"	1,225 l. f.	3.50	5.00	4.75
26. Reinf. conc. bridge railing-type "D"	480 l. f.	4.00	5.00	5.10
27. Operators houses	L. S.	5,000.00	5,000.00	3,500.00
28. Rubber seal at pontoon ends	17,100 lb.	1.00	1.00	.68
29. Timber (creosote treated)	55 M.b.m.	130.00	100.00	133.00
30. Furnishing timber piling (creosote treated)	22,400 l. f.	.80	.80	1.10
31. Driving timber piles	280 ea.	15.00	15.00	25.60
32. Testing type "A" anchors	Actual Cost	10,000.00	10,000.00	10,000.00
33. Struct. steel crossties	240,000 lb.	.10	.09	.15
34. Struct steel superstructure	716,480 lb.	.075	.09	.08
35. Steel bouyancy units	640,000 lb.	.10	.10	.10

UNIT NO. 5

Contract time, 365 days; high bid of four, $510,561.

LOW BIDDERS:

1. Puget Const. Co., Clarkston (contract) — $465,147
2. General Const. Co. & Columbia Const. Co., Seattle — 466,343
3. Puget Sound Bridge & Dredging Co. and Parker-Schram Co., Seattle — 481,129

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Struct. excav. Cl. "A"	2,110 c. y.	12.50	13.00	25.00
2. Struct. excav. Cl. "C"	2,380 c. y.	10.00	9.00	10.00
3. Struct. excav. Cl. "E"	3,025 c. y.	3.00	3.00	4.00
4. Conc. Cl. "A" on steel spans	505 c. y.	20.00	28.00	31.00
5. Conc. Cl. "A" in conc. struct	1,170 c. y.	24.00	26.00	22.00
6. Conc. Cl. "B"	2,595 c. y.	22.00	20.00	20.00
7. Conc. Cl. "D"	4,900 c. y.	12.00	13.00	10.00
8. Reinf.	880,000 lb.	.05	.05	.045
9. Struct. steel	2,120,000 lb.	.085	.08	.084
10. Cast steel	29,200 lb.	.20	.18	.16
11. Cast bronze	3,100 lb.	1.00	.80	1.00
12. Cast steel drains	26 ea.	25.00	25.00	30.00
13. 32-in. galv. steel pipe	260 l. f.	1.25	2.00	1.00
14. 6-in. pl. conc. or v.c. sewer pipe	700 l. f.	.50	.70	.60
15. Reinf. conc. bridge railing	1,920 l. f.	3.00	4.50	3.50
16. Elect. conduit	L. S.	2,000.00	1,600.00	1,800.00
17. Reflector units	2 ea.	5.00	10.00	10.00
18. Steel mesh rdy. deck	106,400 lb.	.08	.13	.13

(Units 6, 7, 8, to be published Next Week)

CHANNEL IMPROVEMENTS, ALBERTA

OWNER: Department of Public Works of Canada.

PROJECT: Dredging a 100-ft. channel through the Athabaska and Clearwater Rivers in northern Alberta to a depth of 4.4 ft. below low water.

BIDS: Six bids were received Oct. 17, 1938, ranging from the contract low of $93,785 to $261,000. The Cumnins Construction Co. of Montebello, Que., was low bidder. Bids on 8,000 cu.yd. of Class A material (solid rock requiring drilling and blasting, and boulders containing two cubic yards or more) ranged from $5.00 to $5.50. Bids on 62,000 cu.yd. of Class B material (loose or shale rock, silt, sand, and other material of any kind not specified in Class A) ranged from $0.8675 to $3.50.

Bridges, etc. (Continued)

Pa., Altoona—45 ft. span bridge over Burgoon Run, riprapping walls of creek near structure, dredging, etc. $53,838. **Maturity soon.** H. J. Baum, city engr.

★**Tennessee**—State Dpt. Hys. & P. Wks., Nashville, bridges, approaches, 0.502 mi. long, Obion Co., to Ziegler Constr. Co., 704 Amer. Bank Bldg., Nashville, **$39,659*****overhead and grading approaches 0.4 mi. long, Shelby Co., to S. & W. Constr. Co., 983 Shrine Bldg., Memphis, **$172,981*****bridge and grading, paving approaches over Hiwassee River, Bradley and McMinn Counties, to Rea Constr. Co., P. O. Box 193, Nashville, **$281,132** ***underpass and paving included, 0.349 mi. long, Knox Co., to H. B. Garrett, 548 W. 5 St., Knoxville, **$86,975.** Grand total $580,747. Bids 1/13. CD 1/5 and 1/10.

W. Va., Charleston—M. R. Mathews, city mgr., substructure Elk River Bridge, to Pocohontas Constr. Co., Charleston, **$75,221** ***superstructure, to Mount Vernon Bridge Co., Mount Vernon, O., **$123,412*****electrical work, to Rosenblatt & Hunt, 1026 Quarrier St., Charleston, **$4,991*****grading, paving, to C. Morris, Bank of Commerce Bldg., Charleston, **$32,963.** Grand total $236,587. Bids 12/12. CD 12/7.

Que., St. Hyacinthe—Viaduct at Canadian National Ry. tracks, Ste. Anne St., day labor. **$270,000.** By-law approved by City Council. J. Bouchard, St. Hyacinthe, engr. CD 12/15 —ENR 12/22.

STREETS AND ROADS

PROPOSED WORK

★**N. Y., Woodhaven** — President Queens Boro, 21-10 49 Ave., Long Island City, plans paving grading, curbing, removing, replacing trees, erecting retaining walls, malls, Woodhaven Blvd., between Park Lane S. and Liberty Ave. $640,000.

BIDS ASKED

Bids Asked January 30

Mass., New Bedford—Reconstructing Acushnet Ave. and Tarkin Hill Rd. $300,000. PWA gr. E. T. Hodson, comr. P. Wks.

Bids Asked January 31

Ill., Waukegan—Lake Co. Courthouse, plant mix surfacing 3.5436 mi. Sect. 68 MFT; bituminous machine mix surfacing 6.4204 mi. Sect. 73 MFT. G. H. Baker, Centennial Bldg., Springfield, state engr. co. roads and city streets.

Iowa—State Hy. Comn., Ames, bituminous base and surface treatment 12.039 mi. S.H. 39 from Harlan west to Harrison Co. line, FA 799 B, Shelby Co., gravel surfacing 0.805 mi. FN 85, Butler Co. F. R. White, Ames, ch. engr.

★**North Carolina** — State Hy. & P. Wks. Comn., Raleigh, grading, traffic bound macadam surfacing 2.39 mi. Project 9698, Madison Co., $200,000-$225,000; grading, traffic bound macadam surfacing and structures on 4.03 mi. Project 7688, Surrey Co., roadway $100,000-$125,000, structures under $15,000; 9.2 mi. Project 2703, Sampson Co., $100,000-$125,000; grading, structures 5.8 mi. Project 275, Sampson Co., $25,000-$50,000; grading 8.05 mi. Project 8252, Cleveland Co., $50,000-$75,000. W. V. Baise, Raleigh, engr.

S. C., Newberry—J. W. Earhardt, mayor, grading, bituminous and brick surfacing, curbing, guttering, concrete sidewalks, storm drains, catch basins on various streets. Ryan Eng. Co., Arcade Bldg., Columbia, engrs. CD 10/26—ENR 11/3.

West Virginia—State Rd. Comn., Charleston, grading, draining, macadam base, road mix surfacing and bridge on 4.94 mi. Kasson-Dent Rd., Barbour Co.; macadam base and surface treating 4.469 mi. Welch-Wyoming Rd., McDowell Co.; grading, draining, concrete paving 3.924 mi. Poca-Plymouth Rd., Putnam Co.; concrete paving 2.84 mi. Blueville-Thornton Rd., Taylor Co.; grading, draining, gravel and macadam base surfacing 2.116 mi. Pineville-Ritter Mine Secondary Rd., Wyoming Co. M. R. Hammill, secy.

Bids Asked February 1

N. Y., Brooklyn—President Brooklyn Boro, curbing, flagging Avenue E, E. 35 and W. 11 Sts.; grading, curbing, flagging E. 49 St.; regulating, recurbing, flagging Germania Pl.; grading Hendrickson St.; furnishing, delivering rented equip. for above street work; permanent asphalt repaving Hopkinson, Putnam, and Mermaid Aves., Monroe, Osborn, Suydam, 52 and 56 Sts.; permanent redressed granite block repaving N. 11 St.

Bids Asked February 7

Ala., Montgomery—Street paving. $40,000. PWA. Chief Engineer of City, engr.

Va., Richmond—Street imprvs. $51,500. PWA. Dpt. P. Wks., Richmond, engrs.

Bids Asked February 8

†**Oregon**—Public Roads, Portland, imprv. 0.257 mi. Willamette Hy., tunnel lining, paving, approach structures, Oregon Forest Hy., P. 21-J3-K2, Lane Co.

Bids Asked February 9

California—See "Bridges and Grade Crossings."

California—C. H. Purcell, engr. State Hy. Dpt., State Bldg., Los Angeles, grading, asphaltic concrete paving, rein.-con. bridge N. Figueroa St., between Sunset Blvd. and Diamond St. Over $25,000.

Bids Asked February 14

Ia., Fort Dodge—Paving 40,000 sq. yd. city streets. Over $25,000. WPA. H. R. Sittig, city clk.

CONTRACTS AWARDED

★**Alabama**—State Hy. Comn., Montgomery, imprv. 5.623 mi. Fayette Co. and 8.939 mi. Sumter and Pickens Counties, to Mitchell Bros. Constr. Co., 3828 1st Ave. S., Birmingham, **$87,363** and **$111,797** respectively*** bridges on 8.939 mi. Sumter and Pickens Counties, also grading, draining, gravel surfacing 7.313 mi. Sumter Co., to Noonan Constr. Co., 1001 East Gregory St., Pensacola, Fla., **$75,120** and **$67,792** respectively***bridge Sumter Co., to C. C. Moore Constr. Co., Panama City, Fla., **$15,699*****rein.-con. overhead and approaches, St. Clair Co., to Phillips Constr. Co., 1028 S. 28 St., Birmingham, **$33,-780*****steel, concrete underpass, approaches 0.568 mi. Jefferson Co., to W. C. Howton Contg. Co., 3904 N. 10 Ave., Birmingham, **$184,814.** Grand total $576,365. Bids 12/30 and 1/6. CD 12/22 and 1/3.

Ala., Montgomery—Curb and gutter work, to S. B. Slack, Decatur, Ga., **$30,884.** Est. $30,000. **PWA.** Bids 1/10. CD 12/22—ENR 12/29.

Arizona—State Hy. Comn., Phoenix, imprv. 2¾ mi. Superior-Miami Hy., Pinal Co., to W. E. Orr, 317 W. McDowell Rd., Phoenix, **$119,914.** Est. $100,000. Bids 1/3, awarded 1/14. CD 12/30—ENR 1/5.

California—C. H. Purcell, engr. State Hy. Dpt., Los Angeles, grading, asphaltic concrete, concrete paving 0.4 mi. Los Angeles Co., to J. E. Haddock, 357 N. Chester St., Pasadena, **$49,693.** Bids 1/12. CD 12/29.

Delaware—State Hy. Dpt., Dover. C. W. Cullen, chn., W. W. Mack, ch. engr., bituminous concrete surfacing 632 ft. Market St. Exten., Smyrna, Contr. 668, New Castle Co., to Old Line Constr. Co., Chestertown, Md., **$10,165.** Bids 12/14. CD 11/21—ENR 11/24.

Delaware—State Hy. Dpt., Dover, C. W. Cullen, chn., concrete paving 2,400 ft. Contr. 670, Sussex Co., to Old Line Constr. Co., Chestertown, Md., **$14,344;** fender system 7 St. bridge, Wilmington, Contr. 650, New Castle Co., to Delaware Bay Shipbuilding Co., Leesburg, N. J., **$5,915.** Bids 1/4. CD 12/13—ENR 12/15.

Ga., Waynesboro—Burke Co., street imprv., **WPA. $54,120.** L. B. Barrett, 317 Western Union Bldg., Atlanta, engrs.

†**Idaho**—Dpt. Interior, Office Indian Affairs, grading, crushed rock resurfacing 4 mi. Culdesac-Reubens Hy., **WPA. $50,058.**

Idaho, Caldwell—Canyon Co., imprv. roads in Notus-Parma Hy. Dist., **WPA. $27,850.** Est. $35,000.

Idaho, Emmett—Gem Co. grading, draining, etc., **WPA. $23,123.** Est. $30,000.

Illinois—State Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield, concrete paving 2.3 mi. FA Route 132, Sect. 5, Madison Co., to Edwardsville Constr. Co., Edwardsville, **$162,142.** Bids 8/12. E. Lieberman, Centennial Bldg., Springfield, engr.

Ill., Chicago—Concrete paving 0.2393 mi. SB9 Route 63-0606-CS, 0606-1-CS, 0506-CS, to A. Ward & Sons, Lansing, **$42,084.** Bids 7/21, awarded 1/14. CD 7/19.

Ill., Chicago—Concrete paving 0.7378 mi. sect. 0910-CS and 0.5103 mi. Sect. 0303 CS, to Standard Paving Co., 30 N. LaSalle t., **$134,-897;** 0.6346 mi. Sect. 0102 CS and 0.7572 mi. Sect. 0101 CS, to R. R. Anderson Co., 625 N. Kedzie Ave., Chicago, **$206,320.** Bids 11/7, awarded 12/12. CD 11/10.

Ill., Chicago—Bd. Local Imprvts., City Hall, 0.3539 mi. S. Laramie viaduct, approaches, to T. McQueen, 1314 Circla Ave., Forest Park, **$77,840.** Bids 11/29, awarded 1/14. CD 11/25.

Ill., Rushville—Schuyler Co., imprv. 3.0514 mi. Sect. 8A MFT, to H. L. Roberts, Rushville, **$8,322.** Bids 12/29. CD 12/28.

Ind., Anderson—H. Gwinnup, engr., City Hall, grading, curbing, asphalt or macadam paving 1¾ mi. Fairview, Madison and 29 Sts., **WPA. $35,000** or more.

Iowa — State Hy. Comn., Ames, imprv. 10.507 mi. FN 195 A, Hancock Co., to J. S. McLaughlin & Sons, 710 Walnut Bldg., Des Moines, **$162,878.** Bids 1/17. Rejected bids 1/17 imprv. 10.507 mi. FN 195 A, Hancock Co. CD 1/10—ENR 1/12.

Maryland—State Roads Comn., Baltimore, concrete surfacing 3.144 mi. Charles Co., to C. S. Fuller, 3315 8 St. N.E., Wash., D. C., **$105,037;** macadam surfacing 0.19 mi. Alleghany Co., to Potomac Eng. & Constr. Co., Cumberland, **$13,600.**

Michigan—M. J. O'Brien, chn. Wayne Co. Rd. Comn., imprv. Dix Ave. from Detroit to Dearborn, to Weir Constr. Co., 6451 E. McNichols Rd., Detroit, **$93,017. PWA.** Bids 11/21. CD 11/10.

Mich., Dearborn—M. A. Stevens, city clk., paving alleys Special Assessment Dist. 350, 351, 352, 354, 355 and 356, to Sachs & Lodewyk, 1113 Lafayette Bldg., Detroit, **$20,902;** paving Orchard Ave., to Smith Paving Co., 6112 Maple Ave., **$14,532.** Bids 12/13. CD 12/2—ENR 12/8.

Neb., Auburn—Nemaha Co., road imprvs., **WPA. $214,838.**

Neb., David City—Butler Co., imprv. roads, **WPA. $102,513.**

Neb., Hastings—Adams Co., imprv. county farm-to-market roads, **WPA. $139,224.**

N. J., Newark—Essex Co., grading, drainage, penetration macadam paving Essex and Freeman Sts., Mitchell, Lyons, Locust and Monroe Aves., Roseland Pl. **WPA. $47,182.**

N. J., West Orange—Town, grading, drainage, penetration macadam paving Longview Ave. **WPA. $33,888.**

★**New York**—State Dpt. P. Wks., Div. Hys., Albany, grading, structures, bituminous macadam penetration method paving 5.64 mi. Warren Co., to Bero Eng. & Constr. Corp., North Tonawanda, **$367,549,** est. **$419,768***** reconstructing hy. incl. 70 ft. through plate girder span bridge, 0.54 mi. Putnam Co., to Barber & Coccolle, Inc., 58 Purchase St., Rye, **$60,915,** est. $72,323***roadside imprv., planting, etc., hy. Dutchess Co., to H. E. Millis Contr. Corp., Amenia, **$3,398,** est. $5,125*** making wash and core borings, at Peekskill Creek trestle and approach, Westchester Co., to Philip J. Healey Inc., 15 Park Pl., New York, **$5,661,** est. $8,320***grading, structures, 6.34 mi. Dutchess Co., to R. Myers, Salem, Ind., **$364,948,** est. $459,952. Grand total $802,471. Bids 12/2. CD 12/6—ENR 12/8.

N. Y., Bemus Point—Chautauqua Co. Hy. Dpt., 454 N. Work St., Falconer, bituminous materials paving Bemus Point-Elley Center Rd., own forces. Est. **$56,000.** Work starts in March. Squire E. Fitch, c/o owner, supt.

N. Y., Binghamton—Dpt. P. Wks., City Hall, bituminous widening Park Ave. **WPA. $27,154.** J. A. Giles, city engr.

N. Y., Celeron—Chautauqua Co. Hy. Dpt., 454 N. Work St., Falconer, bituminous materials paving Summit Ave., Crystal Bend dirt road between Celeron and Lakewood, own forces. **$73,000.** Work starts in March. S. E. Fitch, c/o owner, supt.

N. Y., Denmark — Clearing, excavating, ditching, sub-basing, surfacing 3.4 mi. Halifax Rd. **WPA.** Over **$25,000.**

N. Y., Diana—Village, clearing, excavating, grading, etc., 2.5 mi. Remington Rd., **WPA. $25,000.**

N. Y., Esopus—Village, reconstructing Harderbeck Ave. from County Rd. 4, at Union Center, to County Rd. 82, **WPA. $25,000** plus.

N. Y., Holland—Clearing, ditching, grading, guttering, etc., 10 mi. town roads, **WPA. $25,000.**

N. Y., Kingston—Additional street imprvs., grading, preparing sub-base, storm sewers, etc., **WPA.** Over **$50,000.**

N. Y., Mamaroneck—Village, bituminous asphalt on telford paving 1,300 ft. Palmer Ave. to Boston Post Rd., **WPA.** Over **$25,000.**

N. Y., Moriah—Village, gravel surfacing 5.3 mi. roads. **WPA.** Over **$25,000.**

N. Y., Scott—Grading, drainage, structures, 3 in. fdn. course and 4 in. bottom course, 2.4 mi. West Scott County Rd. 100, **WPA.** Over **$25,000.**

N. Y., Ticonderoga — Clearing, grading, ditching, sub-basing, etc., Vineyard Rd., **WPA. $25,000** plus.

N. Y., Virgil and **Lapeer**—Bd. Supervs. Cortland Co., Cortland, grading, drainage structures, 3 in. fdn. course, etc. 2.6 mi. of East Virgil County Rd. 132, **WPA.** Over **$25,000.**

N. C., Hemp—W. P. Saunders, mayor, paving sidewalks, **WPA. $26,000.**

N. C., Manteo—Dare Co., imprv. and repairing roads, **WPA. $60,983.**

N. C., Shelby — H. S. Woodson, mayor, imprv. streets, **WPA. $91,971.**

O., Marion—Street imprvs., **WPA. $398,034.** T. S. Cathers, City Hall, engr.

O., Marion—Bd. Comrs. Marion Co., road imprvs., **WPA. $242,711.** C. H. Tozer, Courthouse, co. engr.

Okla., Antlers—Pushmataha Co., grading, draining farm-to-market roads, **WPA. $159,-081.** R. Lindsay, 431 W. Main St., Oklahoma City, engr.

Okla., Ardmore—Grading, draining, gravel surfacing streets, **WPA. $115,218.** S. Mathews, Ardmore, engr.

★**Okla., Durant**—Bryan Co., grading, draining farm-to-market roads, **WPA. $1,015,-520.** R. Lindsay, 431 W. Main St., Oklahoma City, engr.

Okla., Fort Cobb—Grading, graveling business streets, **WPA. $30,000.** W. L. Benham, 431 W. Main St., Oklahoma City, engr.

Okla., Holdenville—Grading, draining dirt streets, **WPA. $31,451.** R. Lindsay, 431 W. Main St., Oklahoma City, engr.

Okla., Nowata—Nowata Co., grading, draining farm-to-market roads, **WPA. $55,000.** R. Lindsay, 431 W. Main St., Oklahoma City, engr.

Okla., Sallisaw — Sequoyah Co., grading, draining, gravel topping farm-to-market roads, **WPA. $343,423.** R. Lindsay, 431 W. Main St., Oklahoma City, engr.